

# Municipal Journal

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## SEWAGE DISPOSAL IN CHILLIWACK

### Unusual Kind of Tank or "Separator" for Clarifying Sewage—Laying Sewers and Building Pumping Station in Quicksand—Details of Electrically Driven Pumping Plant

By D. P. DUNN.

Chilliwack, B. C., is situated in the Fraser valley, which is about six miles wide at its broadest point. It is the eastern terminus of the British Columbia Electric Railway interurban line and is 70 miles from Vancouver. The population, which is increasing very rapidly is 2,500. For some years the need for a sewer system has been felt, as the use of cesspools has become quite a nuisance and a menace to public health in times of heavy rains during the winter months. Early in 1914 the city decided to construct a sewer system and called for plans and bids. The work was entrusted to Messrs. Cleveland and Cameron, consulting engineers of Vancouver, and the contract for the work was let to Robert McLean & company of Vancouver. Construction began in May and was completed in December.

During high water in the summer the general surface of the city is below high water level, but a most effective system of diking was constructed some years ago, surrounding the greater part of the city. The general formation in the city consists of seven to nine feet of alluvial deposit overlying quicksand and gravel. Where the alluvium is of sufficient depth, the work of sewer construction is as easy as can be asked; but where the excavation penetrates the sand and gravel the work becomes extremely difficult. The necessity of providing for the draining of basements in the business part of the city made it necessary to lay the sewers here to a depth of over ten feet, a considerable length of which was in the quicksand.

The plan which was carried out consisted of a system of sewers from six to twelve inches in diameter, a pumping chamber at the lowest point in the district, outfall works at sufficient height to allow for flood water in the river and a rising main from the pump well to the outfall. The sewage is treated by what is known as the separator system. The original idea was to use pneumatic ejectors at two or more points within the district, but this was afterward discarded in favor of the single pumping plant as being more economical. The total cost of the works was about \$35,000.

The grades of the sewers throughout the city vary from .22 to .45 per cent. Considerable difficulty was encountered in laying the pipes in certain portions of the city, owing to the quicksand in the lower strata, and in some cases sheet piling was driven down to a depth of from 15 ft. to 20 ft.

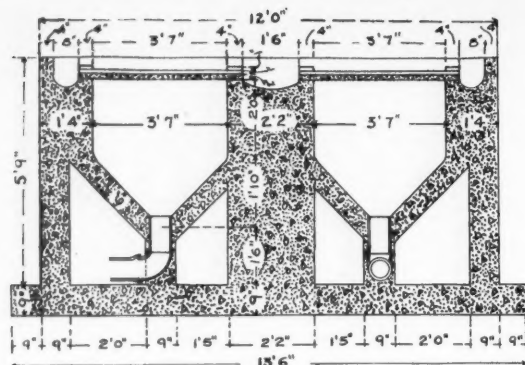
During the construction of the pump chamber, which is of solid reinforced concrete, with walls one foot thick and a total depth of 21 ft., resting on a natural gravel formation, an excavation had to be made 20 ft. by 25 ft. and 21 ft. deep. Ground water appeared at a depth of

three feet, to remove which a centrifugal pump, driven by an 11 h. p. induction motor with a speed of 1,130 r.p.m., and having a capacity of 300 gals. per min., was in continuous operation. Two plunger type pumps driven by 5 h.p. gasoline engines were occasionally used as auxiliaries. During the laying of the concrete foundation blow-holes kept appearing, and this difficulty was overcome by building a half-inch iron pipe into and extending through the foundation and later filling this with cement. Two manholes extending two feet above the surface are provided, one for lowering machinery into the chamber, and the other for the inspection of apparatus. On completion, the chamber was subjected to a 48-hour test for leakage when completely submerged. This was done to satisfy the city officials, who declared it to be quite watertight.

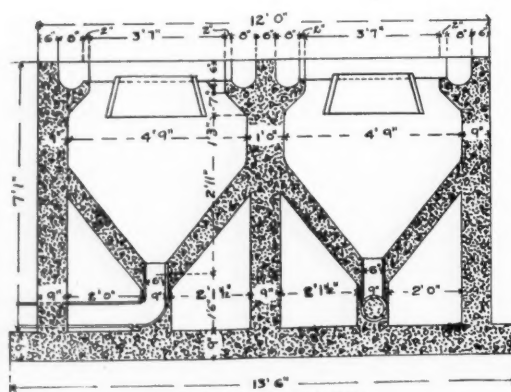
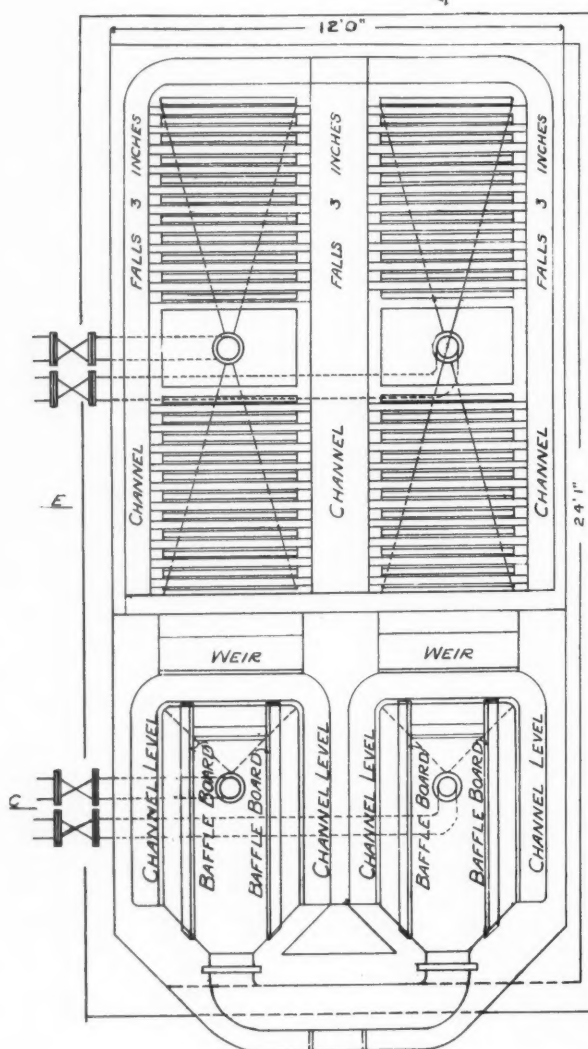
The pumping equipment includes three 3-inch Byron Jackson vertical centrifugal pumps, bottom suction, equipped with brass open runners and brass shafting, having a capacity of 20 g.p.m. against a total head of 33 feet. The pumps are so designed that none of the bearings can come into contact with the sewage, and the self-oiling thrust bearings are placed inside the motor bases, where they are easily accessible. With this arrangement of bearings in motor bases, it is not necessary to withdraw the entire unit to raise the sump cover when it is desired to examine the bearings. The suction pipes are 5-inch cast iron and the outlets are 3-inch cast iron. These three outlet pipes join into a common 6-inch cast iron main, and a few feet beyond, this increases to a 12-inch rising main.

The distance from the centre of the city to the pumping chamber is, roughly, 6,000 ft., and from here to the separator tank 4,000 ft. The total loss in friction in the pumping equipment and piping amounts to 5 per cent. The amount of head that the pumps have to contend with at the pumping chamber is 15.8 feet, including losses. At the separator tank an additional head of 11.32 ft. is encountered. In the rising main about 1.36 ft. is lost owing to friction. Thus the total head for the pumps to operate against is 28.48 ft.

Each pump is driven by a 5 h.p. type UH Fairbanks-Morse vertical induction motor, 220 volts, 60 cycles, 3-phase, 1,200 r.p.m., direct connected through a flexible coupling. The service is a three-wire, lead-covered cable run from the power company's transformers, carried underground in conduit to the motors. The motors are in the top chamber, while the pumps are situated in the lower chamber, the shaft which connects the two being about 6 ft. in length. The bottom part of the sewage chamber is divided into two sections; in one section the



SECTION ON EF



PLAN AND SECTIONS OF SEPARATOR.

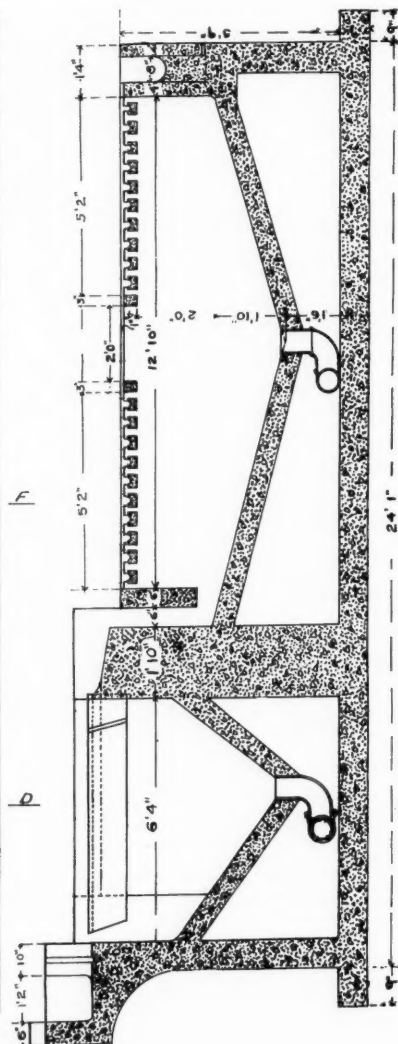
sewage collects, while the other, which contains the pumps is dry and accessible at all times. The pump suction pass through the wall, and the pumps, being set below the level of the sewage, are practically submerged so far as priming is concerned. They are controlled by a 5-inch gate-valve on the suction side and a 3-inch gate-valve on the outlet. A 3-inch check-valve is placed on the outlet, which serves to stop back-flow to an idle pump. An automatic float-switch is provided to each motor, and a control panel installed by means of which any motor may be connected to any one of the three controls, or disconnected from the system; a maximum of flexibility is thus possible.

A special feature of this direct connected pump is non-overloading. The constant horse-power characteristic insures long life to the motors and avoids disputes with power companies, which prefer this type because it enables them to figure on a constant load factor.

The treatment plant consists of a detritus tank or grit chamber and a separator, both in duplicate. They are constructed of concrete and all but the foundations extend above the ground surface. The grit chambers are each 4 ft. 9 in. wide by 6 ft. 4 in. long and 5 ft. deep at the center of the hopper-shaped bottom and 2 ft. 2 in. to the bottom of the vertical sides, both measured from the level of the overflow weir. This gives them each a capacity of 800 gallons. The plant is designed for 600,000 U. S. gallons per day, which gives the detritus tank a capacity of about 2 minutes' flow when containing no grit. At the lowest point of the hopper bottom is a 6-in. pipe for removing sludge.

The sewage enters the grit chamber at one end and leaves it by flowing into a gutter over a weir which surrounds it on the other end and the two sides, passing meantime under baffle boards whose lower edges are submerged 11 inches, which retain all floating matter. The gutters discharge the effluent into the separator.

The sewage enters the separator by passing under a baffle wall which is submerged about 2 feet. It leaves the separator by flowing into a set of weir channels, 20 in number in each separator, which it enters in a thin film. As each of the weir channels is 3 ft. 7 in. long and takes sewage over both edges, the whole is equivalent to a weir 143 ft. 4 in. long. The velocity of flow at any point of departure is, therefore, very low. The edges of these weirs are all at exactly the same level, one foot lower than that of the gutter of the grit chamber. These channels discharge at both end into gutters which flow down both sides of the separator. Any sediment col-



SECTION ON AB



lecting in the separator is drawn off through a 6-inch sludge pipe. The separator is 3 ft. 7 in. wide, 12 ft. 10 in. long and 4 ft. 2 in. deep to the lowest part of the hopper-shaped bottom and 2 ft. 4 in. to the bottom of the vertical sides. Each of the weir channels is made of concrete reinforced with ½-inch wire mesh, and is in shape a bar 4 inches wide and 3 inches deep, rectangular in section except for a groove in its upper face 3 inches wide by 1 inch deep. These bars are set with 2 inches clear space between them.

This is the only plant of this kind operating in British Columbia, and is quite a success. By it over 90 per cent. of the solids in suspension are removed, and the effluent is sufficiently clarified to be discharged into a stream or purified further on filters.

## NEW YORK CITY'S PUBLIC BATHS

### Location, Class of Patrons and Number of Appliances —High Average Daily Use of Appliances

The report of the government of New York City for 1913, which has recently been made public, contains details of the operation during that year of the several public baths in the city. The equipment of the several baths and the use made of them by the public is shown by the accompanying table, and from these figures have been calculated the number of baths per appliance in each of the bath houses, also the average number of baths per appliance per day in each house and the cost per bath for the year. It will be noticed that, although the number of baths taken by females was less than those taken by males in each case, the difference was not as great as apparently had been anticipated, or at least as the difference between the fixtures provided on the men's and women's sides respectively. The result is shown by the fact that the appliances on the women's side were used a greater number of times per year or per day than those on the men's.

The popularity of the baths is indicated by the high average use in almost all of the stations. The average for the year in most of the stations runs from fifteen to thirty baths per appliance per day. Although the figures are not given in this report for the individual months, other reports invariably show a much greater use of the baths in warm weather than in cold. If we assume that during the four warmest months the baths were used at twice as high a rate as during the eight colder months, we would obtain an average for the warmer months of twenty-two to forty-five baths per appliance per day. Twenty minutes per bath is about the minimum time practicable, which means that the baths must have been in use as rapidly as the bathers could be rushed through them for from eight to fifteen hours every day. In other

words, several of the bath houses are apparently used to their absolute maximum capacity.

The location and patrons of the several bath houses are briefly described as follows:

Allen street bath, in the heart of the Jewish district. Carmine street bath, on the lower west side. Cherry and Oliver streets bath, in the midst of a foreign population; frequented by Russian Jews, Italians and numerous Japanese and Chinese bathers. Rivington street bath, patronized chiefly by Hebrews, Russian Jews and Hungarians; the oldest bath in the borough, having been opened March 23, 1901. Rutgers street bath, on the east side, contains the only pool on the lower east side. East Eleventh street bath, situated in what is called the "wickedest block" in New York, because of the rough character of the Italians and the black hand bomb outrages which have occurred in this neighborhood. East 23rd street bath, the finest bath in New York City, and one of the finest in the world. West 41st street bath, in the thickly populated section of the middle west side. East 54th street bath, between First and Second avenues. West 60th street bath, in the heart of the so-called San Juan district, and among its bathers are many of the rough characters of the neighborhood; it is one of the few places where there is an occasional negro bather. East 76th street bath, in a rather isolated section of the east side. East 109th street bath, a popular place for many of the Italians who abound in this neighborhood.

## ABERDEEN SEWAGE TREATMENT.

Aberdeen, South Dakota, a city of 12,000 population, treated its sewage in a septic tank until just a year ago, when a new system went into operation. The septic tank was enclosed with concrete walls and roof, without any ventilation, and as a result the concrete was so badly disintegrated by the gases from the septic action as to be in danger of collapsing. The sewage left the tank almost as foul as it entered it and created a nuisance.

The new system consists of an Imhoff tank of three units, each 20 by 70 feet; a sprinkling filter, 143 by 209 feet, filled with 6 feet of crushed granite, containing 176 Taylor square nozzles; a sludge filter, and a final settling tank.

Some of the unusual features are: That the sludge pipes in the Imhoff tanks do not extend to the top of the tank to provide for removing obstructions from them. Concrete piers, spaced 13 feet apart in each direction, are provided in the sprinkling filter, carrying posts connected at the tops by 4x6 stringers, to support a roof to protect the filter from extreme cold in winter; 2-inch planks being used as roof covering. All wood was painted with a wood preservative. A head of 16.8 feet is consumed in flowing through the plant. Finally, the work was all done by the city by force account.

Public Baths in New York City. Records for the Year 1913.

Location of bath house	No. showers		No. tubs		Plunge, Dimensions	Baths taken		Baths taken per appliance		Cost of operation and maintenance	Total Per bath cents
	Males	Fem.	Males	Fem.		Males	Females	Males	Females		
Allen Street .....	66	20	2	8		323,674	241,327	4,760	8,619	\$20,651	3.7
Carmine Street ...	75	22	2	2	Under construction	235,170	150,493	3,054	6,270	16,950	4.4
Cherry & Oliver St	100	21	4	7		359,303	270,259	3,455	9,652	18,109	3.2
Rivington Street...	89	22			Not Given	219,787	169,693	3,185	7,713	22,407	5.7
Rutgers Place ....	84	47	5	8	Not Given	395,468	286,108	4,443	5,202	33,050*	4.8
E. Eleventh Street	67	27	2	5		356,170	267,525	5,160	8,360	18,796	3.0
East 23d Street...	75	72		4	66x25x(3 to 7)	187,772	124,842	2,504	1,643	24,407	7.8
West 41st Street...	72	29	4	6		296,853	156,758	3,906	4,479	18,556	4.1
East 54th Street...	79	59		1	Under construction	168,194†	99,705†	2,129	1,662	19,210†	7.2
West 60th Street...	49	20		1	60x35x(4 to 7)	330,456	178,037	6,729	8,478	24,417	4.8
East 76th Street...	77	25	1	9		181,808	115,396	2,331	3,394	17,906	6.0
East 109th Street.	91	31	3	4		296,082	142,383	3,150	4,068	19,088	4.3
Totals & averages	904	395	23	55		3,350,737	2,202,526	3,734	5,795	\$253,547	4.9

\*Includes cost of installing new boilers. †Open part of year only. ‡Sums of showers and tubs used in each case.

## STORM WATER INLETS

### Information Concerning Dimensions and Construction of Inlet Openings, Inlets and Catch Basins in Several Hundred Cities

In addition to the information contained in our issue of March 18, Municipal Journal obtained by inquiry, through the courtesy of city engineers and sewerage officials, a considerable amount of information concerning the dimensions and construction of inlet openings, inlets, catch basins, etc., in several score of cities. This information is given in the following article:

Dothan, Ala., sewers were designed for a maximum rate of rainfall of 3.9 inches per hour and a runoff based on the Burkli-Ziegler formula. The sewer grade was made such as to carry to the outlet all sand and earth reaching the sewer, whenever the topography of the land permitted, and there has been an appreciable scouring of some of the concrete sewer outfalls by the sand. Owing to the intense rate of rainfall in that region the sewer inlet opening is made larger than is found in other places, or 8½ inches by 22 inches. The inlet is a basin 24 inches in diameter and 4 feet deep, from the bottom of which a 15-inch pipe leads to the sewer. The basin is set under the sidewalk, with an opening in the curb. The curb is 8 inches high, and by means of a drop in the gutter in front of the opening, the opening is made 8½ inches high. The top of the basin is of casting containing a manhole opening 18 inches in the clear and a 20-inch cover resting in this. The casting is ¾ inch thick and the cover is ½ inch thick, with two 1-inch by ½ inch ribs on the underside of same and a rim fitting just inside the opening.

Other cities using openings in curb face are as follows:

Gadsden, Ala.—Opening, 8 inches by 60 inches, with 3-inch grate set in curb and cast iron manhole cover.

Alhambra, Cal.—Usually 8 inches by 48 inches.

Colorado Springs, Colo.—5 inches by 24 inches.

Denver, Colo.—5 inches by 30 inches, cut through curb.

Fort Collins, Colo.—9 inches by 36 inches.

Middletown, Conn.—Curved opening in curb, 24 inches long, 8 inches high at center.

New Haven, Conn.—6 inches by 36 inches.

Gainesville, Fla.—8 inches high, 12 inches to 24 inches long.

Pensacola, Fla.—6 inches by 30 inches.

Americus, Ga.—10 inches by 24 inches.

Dublin, Ga.—8 inches by 24 inches. Casting made in two parts to fit a 4-foot radius corner, extending 4 feet each side of corner.

Alton, Ill.—Concrete or stone cover, opening about 36 inches long.

Herrin, Ill.—Concrete inlet with 4 inches by 20 inches curb opening; two ¾-inch rods used to reinforce top.

Kewanee, Ill.—Curb opening with grate. Discharges into vitrified pipe bend set in concrete, connected to combined manhole and catch basin on sewer line. Latter has 4-foot trap in bottom, which is made fairly open of one ring of brick to allow water to drain out.

Lagrange, Ill.—4 inches by 12 inches, in stone curb.

Peoria, Ill.—8 inches by 24 inches, cast iron box, with 10-inch cast iron elbow.

Crawfordsville, Ind.—7 inches by 24 inches, with catch basin.

Elkhart, Ind.—6 inches by 30 inches, reinforced concrete top with manhole opening.

Goshen, Ind.—In curb, 17 inches to 22 inches long.

Muncie, Ind.—6 inches by 20 inches for box inlets.

Portland, Ind.—7 inches by 19 inches.

Boone, Ia.—4 inches by 12 inches, to 6 inches by 18 inches.

Cedar Falls, Ia.—8 inches by 15 inches.

Muscataine, Ia.—8 inches by 24 inches, special casting by local foundry.

Oskaloosa, Ia.—8 inches by 24 inches, average.

Chanute, Kan.—Opening in face of curb. No castings.

Independence, Kan.—Basins of concrete; no castings; 10 inches to 12 inches high, by 6 feet to 8 feet long, on large sewers.

Ottawa, Kan.—Curb omitted for 4 or 5 feet; concrete cover spans opening, resting on curb and walls.

Pittsburg, Kan.—10 inches by 36 inches, with three vertical bars.

Wichita, Kan.—5 inches by 16 inches.

Paris, Ky.—6 inches by 20 inches, cast iron top.

Frederick, Md.—9 inches by 6 inches, with one-inch galvanized pipe across opening. Cast iron cover at sidewalk level.

Fall River, Mass.—5 inches by 36 inches; 5 feet by 4 feet cover stone with manhole opening.

Fitchburg, Mass.—5 feet by 22 feet, cut in granite curb.

Negaunee, Mich.—Cast iron top, vertical opening, 5½-inch bars in front.

Fairbault, Minn.—15 inches by 22 inches.

St. Paul, Minn.—6 inches by 16 inches, connected by vitrified pipe to catch basin, which is 10 feet deep with outlet 6 feet above bottom.

Stillwater, Minn.—4 inches by 72 inches to 6 inches by 120 inches.

Jackson, Miss.—Old style, small cast iron inlets with 6 inch by 24 inch openings; new style, brick or concrete covered with iron plate.

Kalispell, Mont.—(Business district), 8 inches by 16 inches.

Lincoln, Neb.—8 inches by 24 inches, concrete top.

Omaha, Neb.—Cast iron.

Asbury Park, N. J.—6 inches by 36 inches, openings in concrete curb.

Atlantic City, N. J.—36 inches long, 5½ inches high at center, top arched, cut in granite; connects to square catch basin in center of street provided with hood traps and connected to manhole by 12-inch pipe; 2½ feet from each end of opening gutter begins to slope from 6-inch depth of curb to 8-inch at inlet. Inlets placed 8 feet back of street line. Pavement slopes up from inlet opening to curb corner, where curb is 3½ inches.

Jersey City, N. J.—6 inches by 24 inches.

Millville, N. J.—Size not given.

Morristown, N. J.—8 inches by 30 inches.

Plainfield, N. J.—5 inches by 20 inches.

Ridgewood, N. J.—24 inch by 36 inch open back curb box.

Hudson, N. Y.—6 inches by 18 inches.

Jamestown, N. Y.—5 inch by 60 inch opening in concrete curb.

Niagara Falls, N. Y.—6 inches by 16 inches, cast iron.

Ogdensburg, N. Y.—9 inches by 20 inches, in cement curb.

Poughkeepsie, N. Y.—8 inches by 30 inches.

Saratoga Springs, N. Y.—6 inches by 24 inches.

Solvay, N. Y.—8 inches by 24 inches, Eureka basin.

Utica, N. Y.—24 inches wide, 8 inches to 12 inches high.

Akron, O.—4 inches by 60 inches, stone or reinforced concrete slab on top.

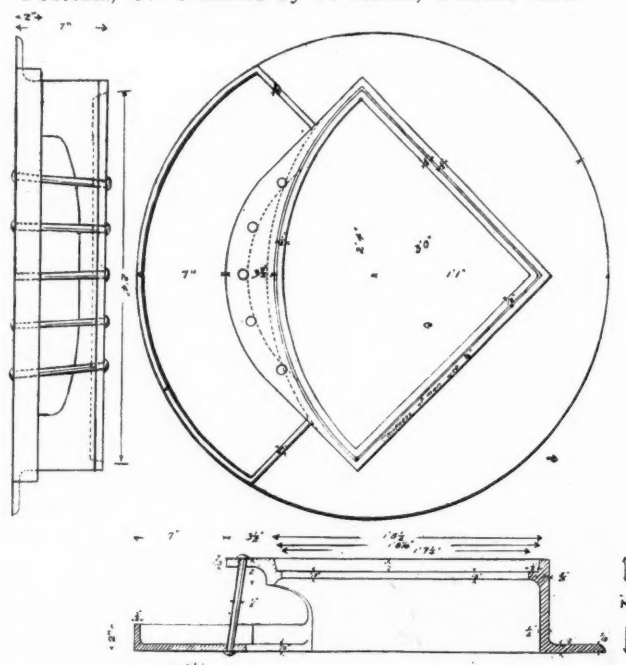
Bellefontaine, O.—6 inches by 18 inches.

Bucyrus, O.—9 inches by 24 inches, cast iron with 18-inch manhole opening.

Cleveland, O.—6 inches by 24 inches.

Dayton, O.—8 inches by 24 inches, to inlets; 8 inches by 40 inches to catch basins.

Fostoria, O.—6 inches by 24 inches, without bars.

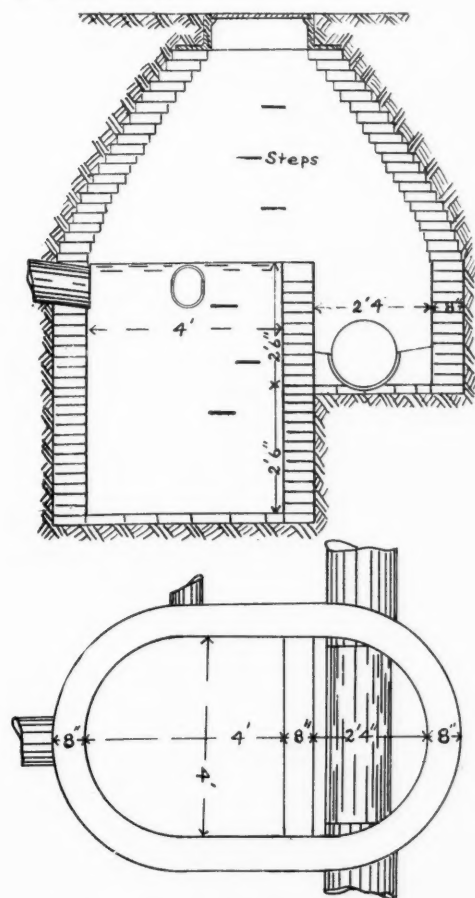


NEGAUNEE, MICH., OLD STYLE INLET.

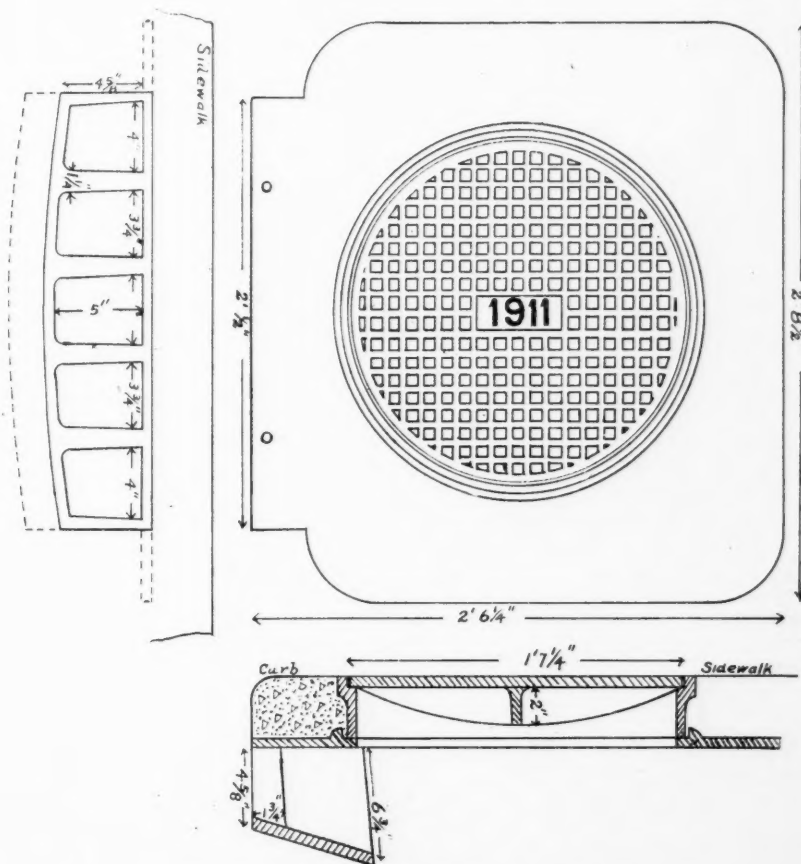


Marietta, O.—8 inches by 24 inches, with 4-foot by 4-foot cast iron cover.  
 Massillon, O.—12 inches by 22 inches, cast iron curb.  
 Nelsonville, O.—Opening cut in curb, cast iron top.  
 Urbana, O.—8 inches by 24 inches.  
 Tulsa, Okla.—12 inches by 46 inches, with vertical bars spaced 18 inches between centers.  
 Allentown, Pa.—7 inches by 32 inches; concrete top with 1½-inch by 1½-inch angle cast in it over opening.  
 Altoona, Pa.—6 inches by 48 inches, one ¾-inch iron bar horizontal in opening; concrete slab on top.  
 Connellsville, Pa.—10 inches by 60 inches, vertical grating.  
 Donora, Pa.—10 inches by 60 inches.  
 Erie, Pa.—Basin casting 2½ feet by 9 inches high.  
 Greenville, Pa.—Opening 6 inches high.  
 Hanover, Pa.—7 inches to 9 inches by 42 inches; castings of local design.  
 Hollidaysburg, Pa.—8 inches by 36 inches, iron cover.  
 Jeanette, Pa.—9 inches by 48 inches.  
 Juniata, Pa.—6 inches by 24 inches.  
 Morristown, Pa.—4 inches by 48 inches, to 9 inches by 48 inches; cast iron top.  
 Philadelphia, Pa.—6 inches high, 26 inches to 56 inches long; cast iron frame with lid.  
 Pittsburg, Pa.—5 inches by 54 inches.  
 Rankin, Pa.—6 inches by 54 inches; metal top; catch basin 4½ feet square by 6 feet deep.  
 Scottsdale, Pa.—10 inches by 42 inches, perpendicular bars spaced 6 inches.  
 Providence, R. I.—4 inches high by 24 inches to 30 inches, in granite coping.  
 Florence, S. C.—Brick facing with 8 inches by 16 inches opening.  
 Orangeburg, S. C.—9 inches by 48 inches.  
 Sioux Falls, S. D.—(At curb intersections), 5 inches by 12 inches.  
 Austin, Tex.—6 inches by 48 inches, in front of which is cast iron plate with ribs diverging from opening to conduct water into it.  
 Beaumont, Tex.—(At curb intersection), opening with bars.  
 Laredo, Tex.—8 inches by 4 inches, vertical grating.  
 San Antonio, Tex.—4 inches to 6 inches high; 30 inches long.  
 Moundsville, W. Va.—12 inches high by 36 inches to 60 inches long.

Eau Claire, Wis.—Casting with opening 20 inches long with three vertical bars.  
 Green Bay, Wis.—6 inches by 24 inches, with bars every 4 inches; steel top.  
 Chippewa Falls, Wis.—8 inches by 20 inches.  
 Janesville, Wis.—10 inches to 15 inches long, generally under iron crossing plate; at foot of grades, inlets connect to combined manhole and catch basin (see cut).  
 Marinette, Wis.—Curb grate 10 inches high.  
 Neenah, Wis.—Six 3 inch by 6 inch openings in casting 26 inches long and 9 inches high.  
 Oshkosh, Wis.—6 inches high; 27-inch vitrified pipe used for basin.  
 Superior, Wis.—6 inches by 22 inches, in stone or concrete curb.  
 Sheridan, Wyo.—(New style), 12 inches by 18 inches grate vertical in curb, 1½ inch openings.  
 Brandon, Man., Can.—7 inches by 24 inches.  
 Vancouver, B. C.—3 inches by 26 inches.  
 The following cities use horizontal grates, in some cases combined with curb opening. Dimensions given are those of grate.  
 Montgomery, Ala.—24 inch grating with throat under same; also 2-foot square cleaning hole behind the curb.  
 Marysville, Cal.—16 inch round grating.  
 Oakland, Cal.—6 inches by 21 inches, vertical opening, and 18 inch by 24 inch grating in gutter; or 10 inch by 36 inch vertical opening and 24 inch by 36 inch gutter grating.  
 New Haven, Conn.—Gutter opening 18 inches by 36 inches, covered by a pair of cast iron pans with perforations, the two pans weighing 410 pounds.  
 Wilmington, Del.—Size not given.  
 Brunswick, Ga.—12 inch by 18 inch bar grating, and larger; removed to clean trap.  
 Coeur d'Alene, Idaho.—18 inch by 24 inch grate bar casting.  
 Chicago Heights, Ill.—14 inch by 18 inch opening with cast iron grating, bars 3 inches apart.  
 Collinsville, Ill.—Curb and gutter casting; curb opening 9 inches by 22 inches; gutter opening, 18 inches by 22 inches, with grating.  
 Decatur, Ill.—18 inch by 43 inch grate.  
 Dixon, Ill.—Flat grate with curb box, with about 100 square inches of opening. Also conical non-stop grates, about 200 square inches opening.



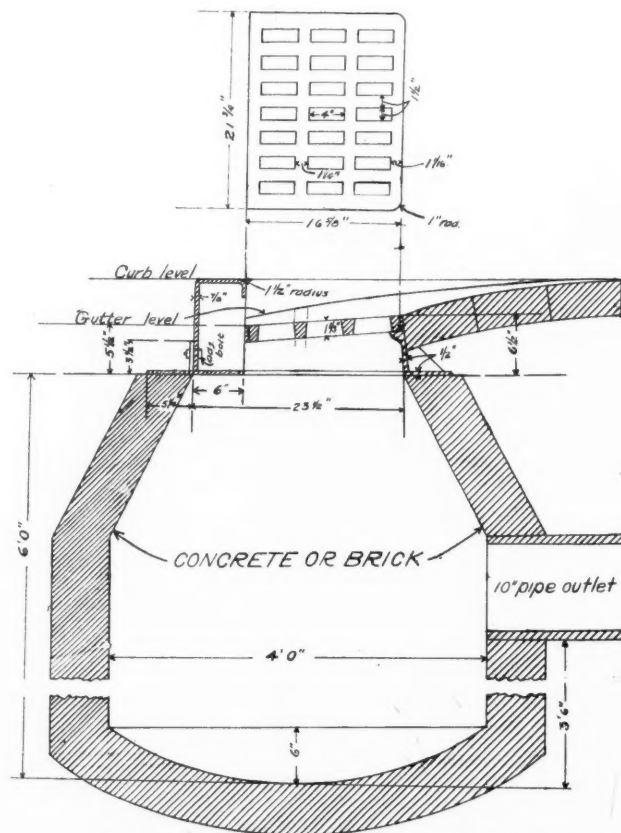
JANESVILLE, WIS., CATCH BASIN.



TORONTO, ONTARIO, STANDARD "GULLEY TOP."

Galesburg, Ill.—18 inches by 24 inches.  
 La Grange, Ill.—10 inches by 18 inches; gutter grate and pan.  
 Litchfield, Ill.—10 inches by 20 inches; opening with 3-inch grating.  
 Marion, Ill.—Cast iron curb and gutter inlets, grated.  
 Oak Park, Ill.—Semicircular grate in gutter, 16 inches by 23 inches, combined with adjustable curb box with vertical opening 23 inches long and 3 inches to 6 inches high. Gutter grate with a clear opening directly over catch basin, or with pan if connected to catch basin in street or parkway.  
 Taylorville, Ill.—Flat grate 12 inches diameter over vertical 12-inch pipe; outgoing pipe 2 to 4 feet above base.  
 Waukegan, Ill.—17 inches by 24 inches open grating and curb opening.  
 Anderson, Ind.—Curb opening  $6\frac{3}{4}$  inches by 30 inches; grate opening with 10 inch outlet.  
 Goshen, Ind.—At each corner, in gutter, round grate 14 inches in diameter.  
 Laporte, Ind.—20 inch curb and gutter grating, weighing 250 pounds.  
 Muncie, Ind.—(For catch basins). Perforated top.  
 Davanport, Ia.—Standard 36 inch grate, with opening in curb directly back of grate.  
 Grinnell, Ia.—18 inches, at curb corner.  
 Wellington, Kan.—18 inches by 36 inches, half in curb and half in gutter.  
 Paris, Ky.—(Few), 12 inches by 16 inches.  
 Boston, Mass.—15 inches to 20 inches long and square, and D-Shaped grates 24 inches square.  
 Brookline, Mass.—Throat stones with D frame castings; a few 20 inch grates.  
 Cambridge, Mass.—Cast iron D frames.  
 Clinton, Mass.—Gutter grate 20 inches square.  
 Greenfield, Mass.—Round, 18 inch diameter; square, 24 inches by 24 inches.  
 Haverhill, Mass.—D frame with 24 inch grate openings.  
 Malden, Mass.—24 inches square, with small opening cut in curb.  
 North Adams, Mass.—24 inches square casting in gutter, with half elliptical opening in curb.  
 Quincy, Mass.—24 inches square casting in gutter, with curb inlet.  
 Reading, Mass.—18 inches square grating.  
 Southbridge, Mass.—D inlet, 24 inches by 30 inches.  
 Taunton, Mass.—14 inch iron casting.  
 Westfield, Mass.—D grates and dish basins.  
 Worcester, Mass.—D frames and rectangular frames.  
 Ann Arbor, Mich.—18 inch by 24 inch grating in gutter, with curb opening.  
 Battle Creek, Mich.—10 inches by 24 inches and 13 inches by 24 inches; most have curb openings also.  
 Cold Water, Mich.—12 inch by 18 inch.  
 Escanaba, Mich.—Six 2 inch by 4 inch openings.  
 Flint, Mich.—17 inch by 22 inch gutter grate and curb opening in casting adjustable in height. (See diagram.)  
 Grand Rapids, Mich.—Grate 24 inches square, giving about 100 sq. in. waterway; curb also recessed for additional area.  
 Kalamazoo, Mich.—Cast iron grates 12 inches by 18 inches and 12 inches by 27 inches.  
 Manistee, Mich.—8 inch by 12 inch square cross-barred grate.  
 Monroe, Mich.—Curb and gutter type.  
 Negaunee, Mich.—(New style.) Half-round gutter grate.  
 Pontiac, Mich.—14 inches by 18 inches.  
 Austin, Mich.—22 inches round, or 17 inches by 22 inches oblong, in gutter.  
 Chisholm, Minn.—Casting 24 inches by 36 inches, one-inch openings.  
 Mankato, Minn.—12 inches by 30 inches gutter grate with 30 inch curb opening.  
 Minneapolis, Minn.—Gutter grate and curb opening.  
 New Ulm, Minn.—12 inches by 36 inches.  
 Red Wing, Minn.—Circular 24 inches diameter, with bars.  
 Rochester, Minn.—17 inches by 22 inches rectangular; also circular, 21 inches and 23 inches diameter.  
 St. Cloud, Minn.—Grate opening, area equal to that of a 10-inch pipe.  
 Virginia, Minn.—20 inches by 30 inches.  
 Hattiesburg, Miss.—18 inches by 24 inches set in concrete gutter.  
 Kansas City, Mo.—Cast iron with 3 ft. 9 in. opening and 14 inches by 24 inches inlet, drop into a sump in front of basin proper.  
 Moberly, Mo.—10 inches by 20 inches.  
 Poplar Bluff, Mo.—18 inch square grate with 6 inch by 18 inch curb opening.

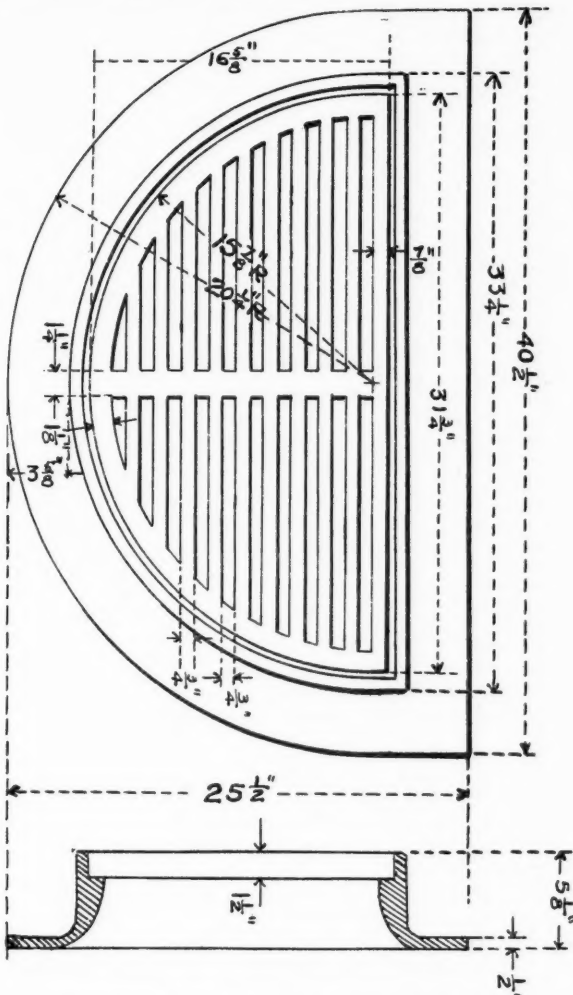
Billings, Mont.—18 inch by 22 inch gratings in 2-foot concrete gutter, connected to catch basin in center of street.  
 Great Falls, Mont.—16 inches square.  
 Helena, Mont.—18 inches by 24 inches and 24 inches by 24 inches cast iron.  
 Norfolk, Neb.—18 inches by 24 inches cast iron.  
 Dover, N. H.—24 inches round.  
 Keene, N. H.—12 inches to 24 inches.  
 Camden, N. J.—24 inch by 30 inch grating with openings  $2\frac{1}{2}$  inches square. Grating removable, in frame 12 inches high.  
 Millville, N. J.—24 inches by 36 inches.  
 Plainfield, N. J.—14 inches by 18 inches.  
 Rutherford, N. J.—24 inch by 36 inch grating in front of 6 inch by 36 inch curb opening.  
 Albuquerque, N. M.—24 inch square gridiron.  
 Elmira, N. Y.—24 inches square.  
 Jamestown, N. Y.—Small cast iron grates.  
 Kingston, N. Y.—26 inches square.  
 Olean, N. Y.—Casting designed by City Engineer Bunce, with grate at bottom and open on side.  
 Oswego, N. Y.—18 inches by 24 inches, with opening in curb protected by bar.  
 Syracuse, N. Y.—12 inch by 24 inch to 18 inch by 42 inch cast iron or wrought iron grating.  
 Goldsboro, N. C.—Curb castings with 14 inch by 18 inch grates.  
 Bismarck, N. D.—30 inch round grate.  
 Fargo, N. D.—24 inch square grate.  
 Minot, N. D.—Gutter and curb grating combined.  
 Ashtabula, O.—18 inches by 24 inches, with opening in curb; cast iron top.  
 Canton, O.—Cast iron top, with grate and curb box in one piece, removable for cleaning.  
 Chillicothe, O.—11 inches by 22 inches and 11 inches by 28 inches.  
 Gallipolis, O.—18 inch square grate.  
 Lakewood, O.—18 inches by 26 inches.  
 Lorain, O.—16 inch square grate with curb box.  
 Marion, O.—16 inch by 20 inch cover grate with 6 inch by 20 inch curb opening.  
 Springfield, O.—18 inch by 24 inch grate with 6 inch by 22 inch curb opening.  
 Troy, O.—6 inch grating in gutter.  
 Bartlesville, Okla.—18 by 30 inch grate opening, 130 sq. ins. clear opening.  
 Shawnee, Okla.—6 inches by 10 inches to 18 inches by 24 inches.



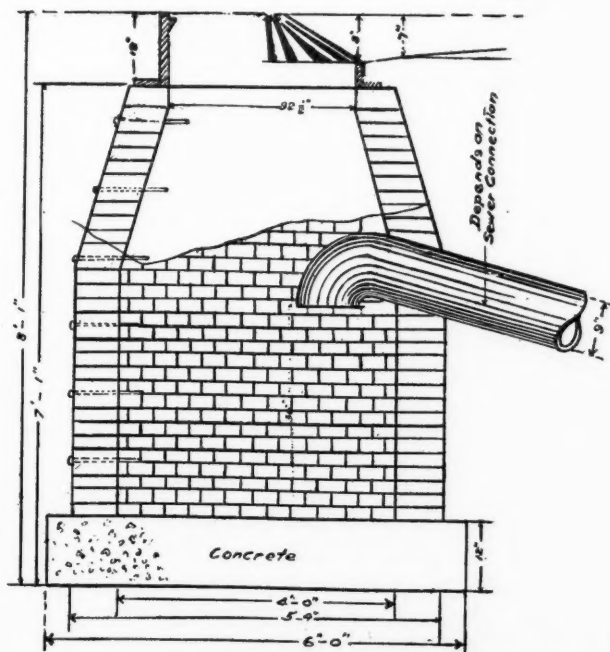
STANDARD CATCH BASIN, FLINT, MICH.



Astoria, Ore.—12 inches by 26 inches cast iron grating.  
 Baker, Ore.—Cast iron with  $1\frac{1}{2}$ -inch holes.  
 Portland, Ore.—Flat wrought iron grating, 16 inches by 32 inches.  
 Allentown, Pa.—16 inch by 32 inch cast iron grate.  
 Bellevue, Pa.—10 inches by 60 inches, 12 inches by 24 inches and 12 inches by 12 inches.  
 Carbondale, Pa.—Flat grate and hooded grate 18 inches by 24 inches; 24 inch by 36 inch grate.



NEGAUNEE, MICH., "HALF MOON" GRATING.



CIRCULAR CATCH BASIN WITH "CLOW" STANDARD CAST-ING AT OPENING, NOW USED IN NEGAUNEE.

Chambersburg, Pa.—18 inch by 32 inch flat casting, slotted.  
 Charleroi, Pa.—12 inches by 60 inches, casting of local make.  
 Connellsville, Pa.—Combined 10 inch by 24 inch vertical and 18 inch by 24 inch horizontal.  
 Du Bois, Pa.—24 inch by 30 inch grates.  
 Freeland, Pa.—20 inch by 30 inch cast iron.  
 Greenville, Pa.—18 inches wide, 36 inches to 48 inches long.  
 Hazleton, Pa. (new style).—Grill with 2 square feet opening and 12 square feet opening in curb.  
 Holidaysburg, Pa.—22 inches by 22 inches to 32 inches by 64 inches.  
 Homestead, Pa.—15 inches by 48 inches.  
 Juniata, Pa.—22 inch by 22 inch grates, sometimes with 6 inch by 24 inch curb opening.  
 Meadville, Pa.—18 inches by 30 inches; double grate on long steep grades.  
 Reading, Pa.—Cast iron frame and grates on 6-foot and 8-foot circular corner basins; also on 4-foot and 6-foot intermediate basins. Special cast iron frames and grates for trap basins. When adjacent to curb, have recess in curb.  
 Titusville, Pa.—18 inches by 24 inches to 24 inches by 24 inches.  
 Warwick, R. I.—18-inch grating.  
 Columbia, S. C.—Casting with curb opening and grate in front.  
 Lead, S. D.—18 by 24 inch grates used single, double, triple, etc.  
 Mitchell, S. D.—21 inches round.  
 Sioux Falls, S. D.—When opposite property line, 20 inch by 24 inch grate.  
 Beaumont, Tex.—When back of crossing, bar grating in gutter.  
 Houston, Tex.—18 inch by 30 inch grating with 5 inch by 30 inch curb opening; use two castings where necessary.  
 Longview, Tex.—15 inch by 24 inch grate made of 1-inch by  $1\frac{1}{2}$ -inch bars spaced  $1\frac{1}{2}$  inches apart, fitted in cast iron seat.  
 San Antonio, Tex.—18 inch by 30 inch grate in front of curb opening.  
 Newport News, Va.—Cast iron 7 inches by 21 inches.  
 Aberdeen, Wash.—12 inches by 24 inches in gutter, inlet 12 inches deep with 6-inch pipe to catch basin.  
 Vancouver, Wash.—12 inch by 30 inch wrought iron grate, bars  $\frac{1}{2}$  inch by  $1\frac{1}{2}$  inches by 30 inches, spaced  $1\frac{1}{2}$  inches on centers.  
 Bluefield, W. Va.—Locally made castings with openings 24 inches and 36 inches long, with special racks or bars.  
 Fairmont, W. Va.—14 inches by 24 inches.  
 Moundsville, W. Va.—36 inches by 60 inches.  
 La Crosse, Wis.—12 inches by 18 inches.  
 West Allis, Wis.—24 inches square.  
 Sheridan, Wyo. (old style).—12 inch by 18 inch grates with  $\frac{3}{4}$  inch openings—very unsatisfactory. New style vertical (see previous list).  
 Brandon, Man., Canada.—12 inches by 24 inches.  
 Edmonton, Alta.—Combined curb inlet and flat grate with 1-inch openings.  
 Hamilton, Ont.—12 inch by 22 inch cast iron grating.  
 Kingston, Ont.—On paved streets, standard castings; on macadam streets, wrought iron grate made by blacksmith.  
 Lethbridge, Alta.—12 inches by 18 inches.  
 London, Ont.—17 inches by 21 inches and 14 inches by 21 inches.  
 Port Arthur, Ont.—17½ inches square.  
 Stratford, Ont.—14 inch by 16 inch heavy grates.  
 A number of cities use castings sold under special trade names. Many who do so probably did not give the name, but the following gave the trade names of castings used by them:  
 Rockville, Conn.—"Duplex," 18 inches by 22 inches.  
 Wallingford, Conn.—"Sessions" grate, frame and trap, with 8-inch or 10-inch connection to sewer.  
 Evanston, Ill.—"Duplex."  
 Freeport, Ill.—"Duplex," various sizes.  
 Connellsville, Ind.—"Duplex," 17 inch by 22 inch opening.  
 Lawrence, Mass.—Hannagan catch basin frame and cover.  
 Newton, Mass.—"Concord" grate, No. 18 or No. 19.  
 Stoneham, Mass.—"Concord" grate.  
 Ludington, Mich.—"Stewart" inlet.  
 Berlin, N. H.—"Concord" gratings, 18-inch, over catch basins.  
 Concord, N. H.—"Concord" gratings.  
 Laconia, N. H.—18-inch circles with "Concord" grates; 24-inch circles with "Duplex" grates with curb inlets.  
 Binghamton, N. Y.—"Townsend" basins, both curb and gutter inlet.

Kingston, N. Y.—"Schenectady" patent basin.  
 Little Falls, N. Y.—Utica Steam Engine & Boiler Co.'s casting, and Little Falls dish grate.  
 Oneida, N. Y.—"Duplex" No. 2.  
 Cambridge, O.—"Duplex."  
 Delaware, O.—"Duplex," on catch basin 4-ft. diameter and 5 feet deep.  
 Greenville, O.—South Bend Foundry Co. casting, 10-inch opening.  
 Greensburg, Pa.—"Allegheny" pattern, 5-foot castings.  
 Kingston, Pa.—"Duplex" No. 2, grate opening 17 inches by 22 inches.  
 Miners Mills, Pa.—"Duplex" No. 2, grate opening 17 inches by 22 inches, diameter of base 38 inches.  
 Waukesha, Wis.—"Duplex," 18 inches by 18 inches and 24 inches by 24 inches.

The grate used by several Massachusetts cities and referred to above as a D grate is also known as a "horse shoe," either of these names approximately describing their shape. Those used by Brookline are 20 inches long on the straight side (that against the curb), the curved front has a 10-inch radius, and the grate is 19¾ inches wide. The frame is 2 inches larger on top in each dimension than the grate, with a 3-inch flange on the bottom. The grate is a casting 2 inches thick, with slots 1½ inch wide and 1⅛ inch apart in three rows, the slots running crosswise of the gutter. The grate weighs about 130 pounds and the frame 200 pounds. The grates used in Cambridge are 6 inches larger each way, and the flange 4 inches wide.

### DIRECT CONNECTED INLET vs. CATCH BASIN

**Former Used Exclusively in Galion, O.—Sightliness,  
Low Cost and Better Sanitation Are Advantages  
Claimed**

BY A. F. UNCKRICH.\*

The city of Galion, Ohio, is not a city of great differences in elevation but on the contrary is not absolutely flat, the heaviest grade of any length being about 10 per cent. All street intersections are crowned as well as some alley intersections and direct connected inlets are used entirely in preference to catch basins. Inlets are placed at every intersection and in many cases also at half way points, and in no case exceed 300 feet apart. Inlets or direct connected drop have been used almost exclusively for the following reasons:

1. Separate system of sewers, with disposal plant for sanitary sewerage.
2. Cost of installation of inlets less than of catch basins.
3. Maintenance reduced to a minimum as compared to catch basins.
4. Adaptability and beauty of inlet in finished improvements.
5. Lower cost allows greater distribution.
6. More sanitary as compared to catch basin.

In connection with the first, it should be said that all street and alley connections are made with storm sewers. All streets are provided with storm sewers before being improved and the necessary Y's are left for inlet connections. Storm sewers are laid with the proper gradients so as to insure their self cleansing if possible. This precaution means the rapid and thorough transportation of all sweepings, etc., which find their way into the inlets. All inlets are barred so as to prevent sticks and stones and the like from washing into sewer.

Standard setting plans are used and at the present time the city of Galion has about 235 direct connected inlets in place. With some few exceptions, the "Star" inlet, manufactured by the McDonald Foundry of Columbus,

Ohio, (formerly of this city) have been used. In the earlier improvements patterns J-L and M were used but in later improvements patterns C-D and E have been used. The latter are provided with a heavy gutter grate of 17x20 and 18x24 inches, respectively, and curb or vertical waterway of 10x20 and 10x24 inches, respectively. They are adjustable and provided with removable and adjustable curb bars. With the separate sewer system, it would be a needless expense to install catch basins, but on the other hand it would also be poor practice to connect inlets direct to sanitary or combined sewers.

As to the cost of installation of inlets as compared to catch basins, the following figures speak for themselves: Inlets set in place, including curved pipe, concrete, etc., bid from \$14 to \$18; curves to be set not less than 30 inches below top of curb. Catch basins, including castings and pipe connection in basin, \$30 to \$40.

Maintenance of inlets as to cleaning, about \$25 per year for entire installation; in fact, the cleaning of inlets is an exceptional duty of the street foreman. Fire hose with a fair pressure of water is sufficient in most cases to open the inlet or elbows as the case may be. In no case is it necessary to maintain an expensive force for the expressed purpose of cleaning inlets. One or two cases of storm sewers have been reported clogged up, but upon opening it was discovered that the roots of poplar trees had almost completely filled the 12 and 15 inch pipe. An ordinance passed by the City Council in 1914 will eliminate the poplar tree from streets and alleys.

In comparison with the catch basin in adaptability and beauty of finished improvement, the inlet gains many points. The inlet eliminates the large and unsightly casting placed at street intersections, often times cutting away a part of the walk or parking. This part of the catch basin, in the inlet, is placed in the gutter, which allows the casting to simply replace a given amount of curb. In connection with the crowned intersection, it becomes invaluable and lends beauty as well as service to the entire scheme of paving.

Low initial cost and low or almost no maintenance expense allow greater distribution, providing a more rapid removal of water and a greater convenience for the public. With crowned intersections, it follows that gutter water will have to be taken care of before reaching the intersection. This means more inlets, but if a maximum of eight inlets were used on a four-way intersection the cost of installation would be \$128 at a price of \$16 per inlet in place, as compared to four catch basins at \$140 at \$35 per basin in place! a difference of \$12 in favor of the inlet, which could be used to convert the manhole in the intersection into a single catch basin, thereby eliminating the cost of three basins; also their cleaning—which is the greatest item.

Water on streets should be taken care of at convenient places and as often as possible, insuring a quick drainage of the street, etc. The practice of carrying the water from square to square in the gutters past intersections, to the general inconvenience of the public, has been entirely done away with. The stoppage of a single basin, usually placed at the corners or on the curb radius, means the flooding of one or more crossings.

The hoarding and catching of all matter in suspension washed from the streets into catch basins, there to await its removal, is not practiced in this city. Odors arising from the so-called catch basins, which virtually become cesspools in the long summer months after the loss of the water seal, make them a nuisance concerning which every Board of Health has had complaint. If the catch basin must be installed, a central basin in connection with a manhole would be far more satisfactory and less expensive.

\*Director Public Service, Galion, O.



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## CHANGE OF ADDRESS

Subscribers are requested to notify us of changes of address, giving both old and new addresses.

Contributions suitable for this paper either in the form of special articles or of letters discussing municipal matters, are invited and paid for.

Subscribers desiring information concerning municipal matters are requested to call upon MUNICIPAL JOURNAL, which has unusual facilities for furnishing the same, and will do so gladly and without cost.

MAY 20, 1915.

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## Sewage Clarification.

Clarification of sewage by treatment in tanks consists essentially in removing from the sewage matter which will settle by gravity. Variations in the form of the tank and its operation have chiefly been devised in an effort to solve what is known as the "sludge problem." As far as the sedimentation is concerned, however, there is little variation from the simple plan of carrying the sewage through a tank at a sufficiently low velocity and for a sufficient length of time to permit the settling out of a large percentage of the matter which is removable by sedimentation.

We described in our issue of December 8th, 1909, a tank which had been devised for securing an increased amount of removal of suspended matters and at the same time decreasing the size of the tank required. Not much has been heard of this tank in this country, but on another page we describe and illustrate one which has been built in a small city of British Columbia and is said to be operating satisfactorily. This construction so distributes the outflow of the sewage that the general effect would appear to be the same as having it discharge over a weir nearly 150 feet long, and yet the entire tank is only about 6 x 15 feet.

There are a number of interesting questions as to the

probable action of a tank of this kind, included among them being whether all of the forty outlet weirs can be constructed and maintained exactly at the same elevation, since a weir 1/64 of an inch higher than the others would fail to act; whether there will not gradually accumulate on the edge of the weir a growth of one of the several kinds of mycelial or other organic matters which develop so persistently on surfaces over which sewage is flowing, etc. It is to be hoped that further information concerning the operation of this tank may be available in a few months, after the plant has been operating for at least one annual cycle.

## Sewage Treatment for Philadelphia.

While several hundred of the smaller cities of the country have constructed sewage purification plants, it has only recently been considered necessary (or practicable) that the largest cities should do so. But New York is considering methods for preventing the pollution of its harbor; Chicago is disposing of its sewage by dilution in a special drainage canal; and the third largest city of the country, Philadelphia, has now completed preliminary plans for purifying the sewage of the entire city. We have already described the experimental station which the city has been operating for several years, and the purification plant on Pennypack creek, which has been to a certain extent a test plant on a working scale. As we go to press, the Bureau of Surveys is submitting to the city councils a report recommending a comprehensive plan for the collection, treatment and disposal of the sewage of the entire city.

This report occupies a volume of nearly 200 pages, bearing on its title page the words "To protect the public health by maintaining the rivers as fit sources of water supply, to provide for the comfort of the citizens by restoring the sewage laden streams to a clean condition, to improve the port by providing a clean, sanitary harbor, the city of Philadelphia should expend five million dollars annually for the next five years for the construction of the necessary works for the collection, treatment and disposal of sewage." In brief, it may be said that the plans proposed contemplate dividing the city into three drainage areas, one of which would discharge into the Delaware river near the water works intake, another into the same river near the lower end of the city, and the third into the Schuylkill river near its outlet into the Delaware. For the first and third, coarse screens, grit chambers and two-story sedimentation tanks are recommended, while for the second area fine screens are to be substituted for the sedimentation tanks.

The estimated cost is divided into five approximately equal parts, one for the purchase of land and the northeastern treatment plant; the second for a collecting sewer and treatment works for the area discharging into the Schuylkill; the third for additional collecting sewers, pumping station and an extension to the Schuylkill river treatment plant; the fourth for collecting sewers and an extension to the treatment works for the northeastern district and the 5th for low level collecting sewers, pumping station and clarification works at the lower end of the Delaware waterfront. The recommendation is that these sums be spent annually and in the order named. It is estimated that the operation and maintenance of these works will require about \$500,000 annually, in addition to which two million dollars each year will be required for the construction of sewers to keep pace with the growth of the city.

Owing to the fact that the report was received just before going to press, we are unable to give any more extensive abstract of it at the present time, but expect to do so in future issues.

## COMMISSION AND CITY-MANAGER CITIES.

We are continually receiving requests for a list of the cities of the country which are operated by commission government or which have city managers, and, therefore, although we published a year or so ago a list of all the cities which up to that time had adopted commission government, it seems desirable to repeat the list, adding to it all of the cities, so far as we can learn of them, which have adopted government of this kind up to date. For this list we are indebted to the National Short Ballot Organization, which had corrected it up to January 26 of this year. Since that time a number of cities have adopted commission or city manager government, and we have added all of these up to the end of April, so far as we are aware of them.

Since there is some difference of opinion as to exactly what constitutes commission government, the Short Ballot Organization classes these cities as "short ballot" cities, in that the elective officials are confined to a few in whom are vested the entire government of the city. Practically, therefore, it may be said that the cities listed here are those which are under a commission form of government. From this it appears that approximately 9 per cent of the population of the country lives under such municipal government. It is noticed that the majority of the places are comparatively small; there are, however, fourteen cities of over 100,000 population in the list, the largest being Buffalo, N. Y., which for several years had been endeavoring to obtain permission from the legislature to adopt commission form of government.

## LIST OF SHORT BALLOT CITIES.

ALABAMA		IOWA		MICHIGAN		Pop.		Pop.	
Birmingham	132,685	Burlington	34,324	Adrian	10,763	*Hickory	3,716	Dell Rapids	1,367
Cordova	1,747	Cedar Rapids	33,811	Battle Creek	25,267	High Point	9,529	Huron	5,791
Florence	6,689	Des Moines	86,368	*Big Rapids	4,519	*Morganton	2,712	Lead	8,392
Hartselle	1,374	Fort Dodge	15,543	*Cadillac	8,375	Raleigh	19,218	Madison	3,137
Huntsville	7,611	Keokuk	14,008	Eaton Rapids	2,094	Wilmington	25,748	Pierre	3,656
Mobile	51,521	Marshalltown	13,374	Fremont	2,009	NORTH DAKOTA			
Montgomery	38,136	Mason City	11,230	Grand Haven	5,856	Bismarck	5,443	Sioux Falls	14,094
Sheffield	4,865	Ottumwa	22,012	Harbor Beach	1,556	Devil's Lake	5,157	Vermillion	2,187
Talladega	5,854	Sioux City	47,838	*Jackson	31,433	Fargo	14,331	Watertown	7,010
Tuscaloosa	8,407	KANSAS		*Manistee	12,381	Mandan	3,873	Yankton	3,787
ARIZONA		Abilene	4,118	Marquette	11,503	Minot	6,188	TENNESSEE	
*Phoenix	11,134	Anthony	2,669	Monroe	6,893	Williston	3,124	Bristol	7,148
ARKANSAS		Arkansas City	7,508	Owosso	9,639	OHIO			
Fort Smith	23,975	Caldwell	2,205	Pontiac	14,532	*Ashtabula	18,266	Chattanooga	44,604
CALIFORNIA		Chanute	9,272	Port Huron	18,863	*Dayton	116,577	Jackson	15,779
*Alhambra	5,021	Cherryvale	4,304	Saginaw	50,510	Middletown	13,152	La Follette	2,816
*Bakersfield	12,727	Coffeyville	12,687	Traverse City	12,115	*Sandusky	19,989	Knoxville	36,346
Berkeley	40,434	Council Grove	2,545	Wyandotte	8,287	*Springfield	46,921	Lebanon	3,659
Modesto	7,258	Dodge City	3,214	MINNESOTA		OKLAHOMA			
Monterey	4,923	Emporia	9,058	Duluth	78,466	Ada	4,309	Murfreesboro	4,679
Oakland	150,174	Eureka	2,333	Eveleth	7,036	Ardmore	8,618	Nashville	110,364
Pasadena	30,291	Fort Scott	10,463	Faribault	19,001	Bartlesville	6,181	Springfield	2,085
Sacramento	44,696	Garden City	3,171	Mankato	10,365	Collinsville	1,324	TEXAS	
San Diego	39,578	Garnett	2,334	*Morris	1,685	Duncan	2,477	*Amarillo	9,957
San Luis Obispo	5,157	Girard	2,446	*St. Paul	214,744	El Reno	7,872	Aransas Pass	1,197
San Mateo	4,384	Great Bend	4,622	MISSISSIPPI		Enid	13,799	Austin	29,860
Santa Cruz	11,146	Hiawatha	2,974	Clarksdale	4,079	Guthrie	11,634	Coleman	3,046
Santa Monica	7,847	Holton	2,842	Greenwood	5,836	Holdenville	2,296	Corpus Christi	8,222
Stockton	23,256	Hutchinson	16,364	Gulfport	6,386	Lawton	7,788	Dallas	92,104
Vallejo	11,340	Independence	10,480	Hattiesburg	11,733	MacAlester	12,594	Denison	15,632
COLORADO		Iola	9,032	Jackson	21,262	Miami	2,907	*Denton	4,732
Colorado City	4,333	Junction City	5,598	Laurel	8,465	Muskogee	25,278	Fort Worth	73,302
Colorado Springs	29,178	Kansas City	82,331	Meridian	23,285	Oklahoma City	64,205	Galveston	36,981
Denver	213,381	Kingman	2,570	Vicksburg	20,814	Okmulgee	4,176	Greenville	8,850
Durango	4,686	Lawrence	12,374	MISSOURI		Purcell	2,740	Houston	78,800
Fort Collins	8,210	Leavenworth	19,363	Aurora	4,148	Sapulpa	8,283	Kennedy	1,147
Grand Junction	7,754	Manhattan	5,722	Joplin	32,073	Tulsa	18,182	Marble Falls	1,061
*Montrose	3,252	Marion	1,841	Kirksville	6,347	Wagoner	4,018	Marshall	11,452
FLORIDA		McPherson	3,546	Monette	4,177	Weatherford	2,118	McKinney	4,714
*Lakeland	3,719	Neodesha	2,872	West Plains	2,914	OREGON		Palestine	10,297
Orlando	3,894	Newton	7,862	MONTANA		Baker	6,680	Port Arthur	7,663
Pensacola	22,982	Olathe	3,272	Helena	12,515	*La Grande	4,843	Port Lavaca	1,699
St. Petersburg	4,127	Osawatomie	4,046	Missoula	12,869	Portland	207,214	San Antonio	96,614
GEORGIA		Ottawa	7,650	NEBRASKA		PENNSYLVANIA			
Cartersville	4,067	Parsons	12,463	Beatrice	9,356	Allentown	51,913	*Sherman	12,412
IDAHO		Pittsburg	14,755	Lincoln	43,973	Altoona	52,127	*Taylor	5,314
Lewiston	6,043	Pratt	3,302	Nebraska City	5,488	Beaver Falls	12,191	UTAH	
Boise	17,358	Topeka	43,684	Omaha	124,069	Bradford	14,454	Logan	7,522
ILLINOIS		Wichita	52,450	NEW JERSEY		Carbondale	17,040	Murray	4,057
Bloomington	25,768	KENTUCKY		Asbury Park	10,150	Chester	38,537	Ogden	25,580
Cairo	14,548	Covington	53,270	Atlantic City	46,150	Connellsville	12,845	Provo	8,929
Carbondale	5,411	Harrodsburg	3,147	Bayonne	55,545	Corry	5,991	Salt Lake City	92,777
Clinton	5,165	Hopkinsville	9,419	Belleville	5,991	Easton	28,532	WASHINGTON	
Coal City	31,140	Lexington	34,099	Beverly	2,140	Erie	66,525	Centralia	7,311
Decatur	7,216	Middlesboro	7,306	Bordentown	4,250	Franklin	9,767	Chehalis	4,507
Dixon	3,898	Newport	30,309	Haddonfield	4,142	Harrisburg	64,186	Everett	24,814
Effingham	25,976	Paducah	22,760	Hawthorn	3,400	Hazleton	25,452	Hoquiam	8,171
Elgin	2,704	LOUISIANA		Hoboken	70,324	Johnstown	55,482	North Yakima	14,082
Flora	2,704	Alexandria	11,213	Irvinton	11,877	Lancaster	47,227	Spokane	104,402
Forest Park	6,594	Baton Rouge	14,897	Jersey City	267,779	Lebanon	19,240	Tacoma	83,743
Hamilton	1,627	Donaldsonville	4,090	Long Branch	13,298	Lock Haven	7,772	Walla Walla	19,364
Harrisburg	5,309	Lafayette	6,392	Millville	12,451	McKeesport	42,604	WEST VIRGINIA	
Harvey	7,227	Natchitoches	2,532	New Brunswick	23,388	Meadville	12,780	Bluefield	11,188
Highland Park	4,209	Jennings	3,925	Nutley	6,009	New Castle	36,280	Fairmont	9,711
Hillsboro	3,424	Lake Charles	11,449	Ocean City	1,950	Oil City	15,637	Grafton	7,563
Jacksonville	15,326	New Iberia	7,499	Orange	29,630	Pittsboro	16,267	Huntington	31,161
Joliet	34,670	New Orleans	339,075	Passaic	54,773	Pottsville	20,236	Parkersburg	17,842
Kewanee	9,307	Shreveport	28,015	Phillipsburg	13,903	S. Bethlehem	19,973	WISCONSIN	
Lincoln	10,892	MAINE		Ridgefield Park	5,416	Reading	96,071	Antigo	7,196
Marselles	3,291	Gardiner	5,311	Ridgewood	5,416	Titusville	8,533	Appleton	16,773
Murphysboro	7,485	MARYLAND		Trenton	96,815	Wilkes-Barre	67,105	Ashland	11,594
Moline	24,199	Cumberland	21,839	Vineland	5,282	Williamsport	31,860	Eau Claire	18,310
Ottawa	11,121	MASSACHUSETTS		Wallington	3,448	York	44,750	Fond du Lac	18,797
Pekin	9,897	Gloucester	24,398	NEW MEXICO		SOUTH CAROLINA			
Rochelle	2,732	Lawrence	85,892	Las Vegas	3,719	Columbia	26,311	Janesville	13,894
Rock Island	24,335	Lowell	106,294	NEW YORK		Florence	7,057	Ladysmith	2,352
Springfield	51,617	Beacon	10,629	Buffalo	423,715	Orangeburg	5,906	Menominee	5,036
Spring Valley	7,035	*Niagara Falls	30,445	*Buffalo	423,715	Spartanburg	17,517	Oshkosh	33,062
Sterling	7,467	NORTH CAROLINA		Greensboro	15,895	*Sumter	8,109	Portage	5,440
Waukegan	16,069	Lynn	89,336	SOUTH DAKOTA		SOUTH DAKOTA			
		Salem	43,697	Aberdeen	10,753	Canton	2,103	Rice Lake	3,968
		Taunton	34,259	Chamberlain	1,275	Chamberlain	1,275	Superior	40,384
						WYOMING			
						Cheyenne			
						Sheridan			
						371 Cities			
						Total Population			
						8,650,000			

†Modified

\*City Manager.



### CENTRAL ELECTRIC LIGHT AND POWER STATIONS.

The Census Bureau has published figures for the year 1912, giving the number and output of central electric light and power stations, both municipal and commercial. The total output in that year was 11,533,000,000 kw. h.—almost exactly double what it was in 1907, and almost five times as much as in 1902. The total number of central stations was 5,221, of which 3,659 were commercial and 1,562 were municipal.

But while 29.9 per cent of all the stations were municipal, the output from these was but 4.7 per cent of the total output. (It was 4.9 per cent of the total in 1907 and 7.8 per cent in 1902.) That is, the average output of the commercial stations was eight times that of the municipal. In a number of cases, however, "station" covered two or more commercial plants operated under the same ownership. It also included the large hydro-electric plants which supply current to scores of private and municipal street lighting equipments, manufacturing establishments, street railways, etc.; while the municipal stations are all (we believe) primarily for street lighting and only incidentally or secondarily (if at all) for commercial lighting and power.

The increasing efficiency of the plants is indicated by the fact that while the output increased 360 per cent in ten years and 96.7 per cent in five years, the primary power (steam, water, gas, etc.) used increased only 308 and 83.7 per cent respectively. In 1912 reciprocating steam engines furnished 25 per cent of the power, steam turbines 40½ per cent, water wheels 33 per cent and gas and oil engines 1½ per cent. During the five years from 1907 to 1912 the use of steam turbines increased 234 per cent.

While the output during the five years increased 96.7 the income increased 72 per cent and the persons employed increased 66.6 per cent. During the same period the number of arc lamps decreased 10.2 per cent., and the incandescent and vapor lamps increased 82.7 per cent.; these including all lamps, and not those for street lighting only.

The greatest total output for any one state was New York's—2,175,000,000, or 19 per cent of that for the entire country.

### SEWER ASSESSMENTS IN MINNESOTA.

In a paper before the League of Minnesota Municipalities, Charles P. Hall, city attorney of Red Wing, discussed at some length the methods employed in assessing abutting property for local improvements in the various cities. In the case of sidewalks, the general practice is to assess the cost against the owner; but Buhl pays one-half of the cost, Cannon Falls pays one-half in the residence districts, Madison pays one-quarter of the cost and Northfield puts in the foundation and the owner the wearing surface. The greatest variety, however, is found in assessing for sewers. Concerning this, Mr. Hall gives the following information:

It is interesting to note the various and different devices which have been placed in charters in an effort to equalize sewer assessments. While the property owner who lives on a rocky street could be legally assessed the full cost of rock excavation his fellow citizen living on a sandy street is legally limited to much smaller assessment. A solution has been sought in establishing an average cost, which cannot, however, be more than the lowest cost, unless by division into districts and including and considering the cost of trunk construction, a uniform and yet legal rate can be obtained.

The general practice is, however, to assess the total cost of a sewer improvement against the abutting property, the city usually paying for catch basins, etc.

Albert Lea assesses property owners in an amount not to exceed the cost of an eight-inch main. Glencoe has a similar practice.

Minneapolis has authority to assess, but not to exceed the cost of a sewer 2 feet in diameter, including catch basins, manholes, flush tanks, or an equal sum per front foot not to exceed \$4.00 per lineal foot.

Melrose establishes sewer districts and assesses against whole district on a basis of square feet contained in each lot in the district. The cost of intersections is paid for out of the general fund.

Mountain Range constructs all sewers at general expense of city, and Buhl assesses only one-half cost. Eveleth does not assess sewers.

Red Wing assesses 60 cents per front foot, provided property can be found benefited to that extent.

In Wheaton the city, by a discount provision, pays 20 per cent. of the cost.

Cannon Falls assesses not to exceed 60 cents per front foot.

St. Peter \$1.25 per foot.

In St. Peter corner lots are assessed not more than 100 feet.

Madelia assesses only one side of corner lots, the other being pro-rated against other abutting property.

Excelsior assesses \$1.00 per front foot and rebates of fifty feet for corner lots if sewers are placed on both sides.

East Grand Forks assesses corner lots in the ratio which 10 bears to 23.

Austin does not assess intersections.

Cannon Falls assesses corner lots only on the longest side.

While the general practice is to assess corner lots on both sides, the justice of assessing only the longest side appeals strongly to any one who considers that phase of the question.

### WHAT IS ASPHALTIC CONCRETE?

#### Lack of Definiteness in Meaning of This Term— Desirability of Limiting Character of Mixtures to Which It Is Applied

Asphaltic concrete is coming into a degree of popularity that makes it highly desirable to identify this form of pavement by more definite standards than now exist. Asphaltic concrete in one city may mean a sheet asphalt surface mixture with the addition of 8 per cent of 2-mesh and less than 20 per cent of 4-mesh stone. In another city the mixture may be a rough-and-ready combination of 40 per cent of sand and 60 per cent of stone. One of the more carefully prepared specifications contains the following provisions:

**Sand:** The sand shall be a natural bank or river sand, all of which will pass a 10-mesh screen. On sifting, at least 15 per cent shall be retained on a 30-mesh screen and at least 22 per cent shall pass an 80-mesh and be retained on a 200-mesh screen.

**Stone:** The crushed trap rock shall all pass a screen of 2 meshes to the lineal inch and all be retained on a 10-mesh screen, or run of crusher trap rock can be used provided the portion passing the 10-mesh screen is of suitable grading to serve as sand and filler, in which event only sufficient sand and filler will be added to insure the proper proportion of sand and filler in the mineral aggregate.

**Filler:** If the screenings do not contain sufficient 200-mesh particles, they shall be supplied by the addition of a suitable amount of ground limestone, or any other mineral matter (or Portland cement) of sufficient density to produce a powder having a volume weight when ultimately compacted of at least 90 pounds to the cubic foot. It shall be so fine that at least 75 per cent shall pass a 200-mesh screen.

**Combining Materials:** The sand and rock complying with the above specifications shall be combined in such proportion that the finished mixture shall contain not more than from 8 to 22 per cent of aggregate passing a 4-mesh and retained on a 10-mesh screen and less than 10 per cent passing a 2-mesh and retained on a 4-mesh screen.

An aggregate such as that described in this specification might be more correctly denominated a stone-filled asphalt mixture rather than asphaltic concrete. The name, of course, is not important so long as we know what it means; but when a pavement is described as

asphaltic concrete, the term ought to convey something definite to the mind. This cannot be the case so long as a mixture such as that just described is called asphaltic concrete by one engineer while another applies the same term to a mixture consisting of 1-2 to 1 1-4 inch stone and from 10 to 15 per cent of sand of an unspecified grading. We should at least distinguish between "fine asphaltic concrete" (meaning a standard sheet asphalt surface mixture with the addition of fine stone) and "asphaltic concrete" of the type that is perhaps more exactly described as asphalt macadam; the former being a stone-filled sheet asphalt mixture and the latter a stone mixture to which there is added a small proportion of sand.

About the oldest examples that can be found of asphaltic concrete that has been laid in any considerable quantity are in Buffalo and Rochester, N. Y. This type of pavement has been used in these cities for more than 10 years. As described by the contractors, who have laid a large yardage in Rochester, the mixture is of the following composition:

Composition.	Original mixture.	Finer portion.
Bitumen .....	8.9	11.1
200-mesh .....	12.3	17.1
100 and 80-mesh.....	10.8	15.0
50 and 40-mesh.....	24.2	33.7
30, 20 and 10-mesh.....	16.3	22.7
4-mesh .....	21.5	....
2-mesh .....	5.4	....
	99.4	99.6

It will be observed that this mixture contains a considerable proportion of 200-mesh material and comes within the definition of "fine asphaltic concrete." So also does the mixture laid in Riverside Drive, New York, in 1913. The latter pavement has given an excellent account of itself so far under very trying conditions of traffic. It is not to be assumed, however, that asphaltic concrete, consisting of haphazard stone and sand combinations and without a sufficient amount of fine material, will give the service that can be obtained from the mixtures more properly described as stone-filled sheet asphalt.

For some years the composition of asphaltic concrete mixtures was governed more or less by the terms of the decision of Judge Pollock, out of which developed the so-called Topeka specification. The Topeka decision, however, did not assume scientifically to determine what would be an ideal paving mixture, but merely held that a certain mixture would not constitute infringement of a patent. It lies with those who are interested in the building of good pavements to see not merely that a patent is not infringed, but that a good paving mixture is obtained. This cannot be done without giving due consideration to the importance of the grading of the finer portion of mixtures—an importance fully demonstrated in the painstaking investigations and experiments under the lead of Clifford Richardson that resulted in the standardization of sheet asphalt paving mixtures. The term "standard sheet asphalt paving mixture" now conveys a definite meaning. It is important that the term "asphaltic concrete" should have an equally definite meaning.

#### COLLECTING GARBAGE IN VICTORIA.

Collections of garbage are made bi-weekly in the business and weekly in the residence districts of Victoria, B. C. In the business districts a charge of 8 cents per can of 3½ cubic feet is made for collection; but this does not cover the cost, as the whole district has to be gone over, while collections from a large number of houses are still made by private scavengers. Re-

cently a Peerless truck has taken the place of five carts in collecting and has resulted in a saving of labor cost of about 15 cents per ton. The average cost of collection of garbage from the residential districts, on the basis of one cubic yard weighing 1350 pounds, has been \$2.54 per ton, delivered at sea, as against \$2.83 for the preceding year. These figures do not include overhead expenses or depreciation on equipment or buildings. The total collections for the year were 18,720 tons.

#### STREET CLEANING AND DUST PREVENTION IN BOSTON.

During 1913, 136,654,469 square yards of streets were flushed in Boston at a cost of \$21,562.75, or an average of \$0.1577 per square yard, not including the cost of the water, of which .0913 gallon per square yard was used. The total cost for team collection for the eleven sanitary districts into which Boston is divided was \$25,198.62, the cost per cubic yard collected varying with conditions from \$1.41 to \$4.13. The total collection amounted to 9,812 yards. For collecting 28,512 yards by push cart, the total cost was \$104,994.79, the cost per yard ranging from \$2.80 to \$5.24 in the several districts.

Machine sweeping, in all eleven districts, covered a total of 375,021,773 square yards, the average cost of sweeping a thousand square yards being \$1.088. The average amount of dirt removed per 1,000 square yards was .63 cubic yards and the cost of collection per cubic yard was \$1.78.

Oil was applied to more than seven million square yards an average of 5.6 times, the total area oiled being 39,830,630 square yards. The average amount applied per square yard was .2475 gallon. The cost per yard of treatment was \$0.01947 for 1913 as compared to \$0.01827 for 1912.

Water sprinkling was used on a total of 812,784,000 yards, 116,100,000 gallons of water being used. The average cost of treatment per square yard was \$0.03386 as compared to \$0.03565 in 1912.

#### FIRE PREVENTION IN CHARLESTON, S. C.

One of the important duties of the Charleston, S. C., fire department is the inspection of mercantile establishments, hotels, office buildings, yards, cellars, etc., in order to see that from a fire standpoint there are no conditions existing that are liable to cause or promote a fire. When faulty conditions are found, orders are at once issued that they be corrected. Inspectors also see that there is nothing in or on any building that is liable to interfere with or delay the firemen in the performance of their duty or endanger their lives or the lives of others in case of fire.

There is no regular inspection of private residences as the limited force of the department does not permit of this. Property of this class is inspected only on receipt of a complaint.

During 1914, 8,510 building inspections were made, an increase of 825 over 1913. Chimneys and hearths were inspected in 156 buildings and 30 complaints about stove-pipes were attended to, owners and tenants being shown how to comply with the ordinances in these cases. A total of 496 recommendations for permits for erection of or repairs to buildings were given.

Firemen are present at all theater performances to see that the rules and regulations of the department are observed. Frequent inspections are made of the moving picture houses to insure compliance with the laws. Licensing of moving picture operators is also under control of the department.



## The WEEK'S NEWS

Pennsylvania's "Good Roads Days"—New Road Legislation in Ohio, Wisconsin and Pennsylvania—Dedication of St. Louis' New Filter Plant—Newark's Water Problems—Waterworks Legalities—New Philadelphia Street Lighting—Lighting Competition Suits—School for Pittsburgh Firemen—Detroit Bridge Burned—Ohio Cities' Finances—Clean-up in Pittsburgh—Detroit's Street Car Strike—State Jitney Regulation in New York, Colorado and Maryland.

### ROADS AND PAVEMENTS

#### Good Roads Enthusiasm Sweeping Pennsylvania.

Harrisburg, Pa.—Officials of the state highway department are making efforts towards achieving a success with the "State-wide Good Roads Day" on May 26. State Highway Commissioner Cunningham intends to send his chief workers through the state on that day to assist and advise the workers wherever possible. According to the tentative arrangements, Commissioner Cunningham will spend the day in the western counties, First Deputy State Highway Commissioner Hunter in the southeastern part of the state and Chief Engineer Uhler in the eastern and central parts of the state. Maintenance Engineer Biles will be assigned to a definite territory in the state and other officials of the department will be on the job. Every county in the state intends to work its roads. All kinds of organizations have enlisted in the cause. Boards of trade, commercial clubs, chambers of commerce, automobile clubs, school superintendents and teachers, churches, medical associations, the State Grange, farm bureaus, county supervisors' associations, agricultural boards, bankers, manufacturers and newspapers are all co-operating for better roads.

#### Ohio Highway Legislation.

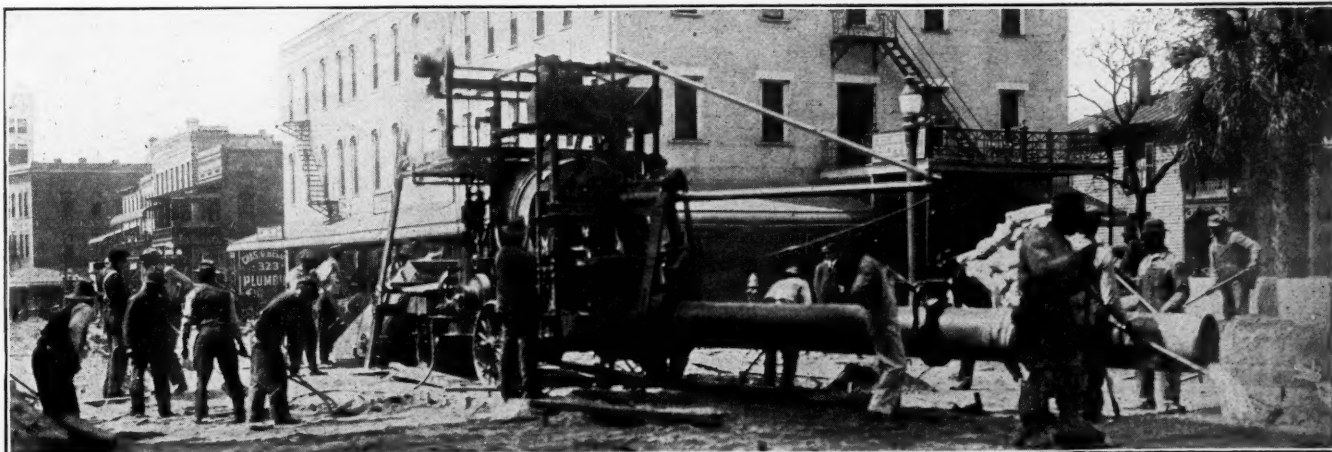
Columbus, O.—Loaded down with a large number of amendments, which doubtless will send it to conference committee, the big Cass highway code bill has been passed by the house by vote of 79 to 13. The house refused to accept the bill's redistribution of the state highway fund, half to main market roads and half to intercounty roads, but restored the percentages in the present law, 25 per cent to market roads and 75 per cent to intercounty roads. Amendments were made so that the highway tax is outside the 10-mill limit, but not outside the 15-mill limit, to give state aid to improvement of village streets that are parts of state roads; to increase the salary of the secretary of the highway department from \$1,800 to \$2,000; to cut out the necessity for approval by the state highway commissioner of the granting of inter-urban railroad, telephone or other franchise on a state improved road; to limit special assessments to one-third the value of the abutting property, and to require the erection of white-painted fences along curves on hill roads. The

bill, which has passed the senate, places the building of the intercounty roads in the hands of the county commissioners; reduces from eight to from one to four the number of township road superintendents, and makes the county surveyor the county highway superintendent. It simplifies and condenses a mass of road laws, some of them contradictory.

A bill has been introduced validating road contracts which are defective because made by former State Highway Commissioner Marker in excess of appropriations. The bill also transfers for payment of the contracts \$165,000 for market roads and \$50,000 for intercounty roads. A road appropriation bill has been introduced carrying for construction \$707,100 for market roads, \$493,000 for intercounty roads, \$303,000 for maintenance, repair and patrol.

#### New Highway Legislation for Wisconsin.

Madison, Wis.—The special committee on highways of the senate has introduced a bill radically changing the present state highway system. The county is made the unit for road construction, with practically all authority lodged in a committee of three, known as the highway committee of the county board. This committee is to select the county highway commissioner, without restriction as to qualification, or civil service test, who is subject to removal by the committee with or without reason. A minimum salary of \$1,000 per annum is fixed for the commissioner. The only feature of the present state highway commission retained is an official to be known as the state highway consulting engineer, whose salary is fixed at \$4,000, and whose function it will be to advise with the county highway committee and commissioner. The total expense for his office is limited to \$15,000 a year. Each county is required to levy a county road tax of one-half mill annually. From this fund the county will contribute one to each town an amount equal to the amount it raises for county road purposes, but need not exceed \$2,000 in any single township. To get county aid a town must raise \$500. The state is required to appropriate not to exceed \$500,000 annually out of fees paid by corporations, and taxes of railroad companies, which is to be used to pay to each county one-third of the total amount spent by it on county aid roads in the previous year. This makes the state portion one-fourth of the total spent.



Courtesy, Florida Times-Union, Jacksonville, Fla.

JACKSONVILLE'S CONCRETE MIXER AT WORK.

### City's Concrete Mixer a Money Maker.

Jacksonville, Fla.—The big concrete mixer shown in the cut on preceding page is owned by the city and has saved the taxpayers several thousand dollars during the past two and one-half years. It is capable of turning out 1,200 yards of six-inch concrete base per day. The large spreading boom saves the expense of four mule carts and nine men. The mixer has been used on several of the city streets and has always proved entirely satisfactory. The picture shows the big machine in operation on Forsyth street, placing the concrete base for asphalt paving.

### Convict Labor on Pennsylvania Highways.

Harrisburg, Pa.—The Kuhn bill, authorizing employment of convicts on highways, was passed in the house after objections by members who contended that it would be unfair to labor. The vote was 106 to 36.

### New Assessment Law.

Columbus, O.—The house has passed the bill by Senator Collins, of Cincinnati, empowering cities to assess half the cost of improving boulevards and parks against abutting and adjacent property owners, leaving the remainder to be paid from the city treasury. Although the bill is wanted particularly in Cincinnati, it will benefit Cleveland and other cities.

### Begin Large Warrenite Job.

Bridgeport, Conn.—Warrenite work has been actually begun, the Warren Brothers Company having completed plans to have four plants here and to employ 500 men. Forty men are now working on the preliminaries, unloading material and supplies. The work will begin on the East Side this year, although when the full contracts get working there will be efforts on either side of the river. The Warrenite contracts, calling for \$160,000 worth of material, have been duly signed by Mayor Clifford B. Wilson, City Attorney William H. Comley, Jr., Director of Public Works Jacob A. Courtade and City Clerk J. Alexander H. Robinson. These contracts cover work which would have been done last year but for an injunction.

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## WATER SUPPLY

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### St. Louis Filter Plant Opened.

St. Louis, Mo.—The city has celebrated the dedication of the new \$1,350,000 filtration plant at Chain of Rocks. Many citizens, including delegates from 150 organizations, responded to the invitation of the city officials. The new plant, which is of the rapid sand filter type, has a capacity of 160,000,000 gallons daily, increasing to 200,000,000 in emergencies. The filter house is 750 feet long by 134 wide and contains forty filters. The building is entirely of concrete and metal and the headhouse is similarly constructed. It contains the boilers, tanks, pumps and laboratory. The coagulation and sedimentation process, installed in 1904, is still used in connection with the rapid sand filters and the sterilization with liquid chlorine when necessary. The waterworks are now valued at \$29,680,000, with a bonded indebtedness of \$2,642,000. The flat rate is 8¾ cents per 100 gallons. The new addition took 20 months in building.

### Want Increased Water Supply.

Newark, N. J.—Faced with the necessity of increasing the city's water supply within the next three years, the board of works has renewed its application to the state water supply commission for rights in the Wanaque river watershed at Midvale. It was pointed out in a resolution that construction work on some sort of an additional supply must be started not later than the present year. The present maximum capacity of the Pequannock watershed is approximately 52,000,000 gallons a day, but the city engineers point out that this could not be relied on for any great period during a season of drought. A maximum of 47,000,000 gallons only leaves a necessary margin of safety, they say. The present average daily consumption is in the neighborhood of 42,000,000 gallons, and this increases at the rate of approximately 2,000,000 gallons per day per year, so that in three years what is considered the necessary margin of safety would be seriously encroached upon.

City Counsel Spaulding Frazer and Chief Engineer Morris R. Sherrerd were requested to draw up a formal application to the water commission presentation.

Newark first asked for Wanaque in 1909. The site of a big reservoir was surveyed, the locality for a dam selected and several hearings conducted by the state board at Midvale. Private property owners in the section presented strong opposition to the scheme. The proposed work would more than double the city's available water supply. For a time the matter rested, and then the scheme was given new impetus by eight other municipalities in the section joining with Newark in a proposal to have the state develop the Wanaque and sell water to the municipalities. The water commission adopted this plan in 1911 and the municipalities involved appropriated sufficient money for preliminary work. Before this plan could be carried out, however, the question of the advisability of acquiring the East Jersey Water company's plant at Little Falls was injected into the question, and the state board proceeded to have the property appraised. The company also had an appraisal made, and it was found that there was more than \$1,000,000 difference in the two. That scheme rested and the state board again took up the Wanaque plan. While the water commission was considering the matter, however, the court of errors and appeals handed down a decision early this year denying the board the right to issue bonds for purchase of the Wharton tract, in South Jersey, for developing a supply there, and this was held also to block the Wanaque development. This situation, however, has been overcome by passage by the present legislature of an act to enable the commission to issue bonds for the Wanaque in the names of the municipalities involved. The senate at Trenton has passed a measure which makes it possible for municipalities of the state to acquire a potable water supply by raising money and turning over the acquisition of property desired to the state water supply commission. This measure has already passed the house. It is possible that Paterson and Newark will have to fight for the rights to the source.

### Borough May Compete with Company.

Tarentum, Pa.—The public service commission at Harrisburg has dismissed the petition of the Allegheny Valley Water Company's bondholders against the borough of Tarentum. The petition declared that the borough was constructing a water plant and threatening to furnish water at unreasonably low rates in order to bankrupt the water company. The commission was asked to enjoin the borough from continuing to construct the plant.

### Waterworks Prosperous.

Waterloo, Ia.—Secretary George H. Shoemaker of the Waterloo waterworks in his annual report to the city auditor states that the surplus earnings for the twelve months were \$45,702.22. The total moneys received amounted to \$104,837.75, while the cost of operation and maintenance was \$59,135.53. The annual rates gave \$2,187.81, meter rates, \$74,168.99. Merchandise and supplies cost \$12,886.52; labor, \$14,195.93; salaries, \$13,699.51; pipe cost \$10,371.83. The value of the plant is now \$702,033.13. The system has laid 53.65 miles of mains, 557 hydrants, 7,972 connections, and 4,605 meter connections.

### Company May Increase Rates.

Benwood, W. V.—The Public Service Commission at Charleston has decided in the matter of an application by the Benwood and McMechen Consolidated Water Company for an increase in rates at Benwood. The company made application for an increase and a minimum meter charge of 83 cents last spring which was argued several months ago. Pending action of the commission the company was forced into a receivership and attorney S. G. Smith of this city was named receiver. In the order the company is permitted to make an increase of five cents per 1,000 gallons up to 30,000 gallons per month. It is also permitted to place a minimum meter charge of fifty cents per month. Heretofore the company had no minimum meter charge and small consumers obtained their water supply at 15 or 20 cents per month. This was found to be inadequate by the company, as the business could not be



properly conducted with such a small income. The commission found that the rates were entirely too low and on account of the revenues the company has been permitted to make the increase. The rate in McMechen will not be changed.

#### Work on Milwaukee Water Tunnel.

Milwaukee, Wis.—Jackson & O'Brien, the contractors who will construct the lake shore water tunnel, to connect the intake tunnel and the North Point pumping station, have set a force of excavators to work. The tunnel will be more than a mile long and it will cost the city \$250,000. Dirt taken from the tunnel will be utilized by the park board in the construction of a lake shore drive.

#### Waterworks Profitable.

Oshkosh, Wis.—According to a report filed with the commission council by Assistant Manager J. E. Walter, the municipal water plant continues to be a profitable proposition. The report covers a period of nine months, ending March 31, and states that the operating revenue of the plant in that time was \$63,596.36, and the operating expenses amounted to \$27,023.64. The gross income amounted to \$39,262.51 and the net income was \$20,912.56. After making the usual deductions, the net surplus available as the result of the nine months' business was \$17,532.96. This amount, added to the net surplus of \$10,728.52 reported to the Wisconsin railroad commission June 1, 1914, makes a total surplus of \$28,261.48.

#### Water Company Wins Suit.

Texarkana, Ark.—In the federal court for the Texarkana division of the Western District of Arkansas, a decree has been rendered in favor of the Texarkana Water Corporation in its injunction suit against the city of Texarkana, and a judgment for costs in the sum of \$1,250 was assessed against the defendant, which decree was in accordance with the findings of Special Master Southmayd. Last year the East Side council passed an ordinance reducing the rates which the Texarkana Water Corporation might charge for water service, and fixed a scale of prices. The water corporation promptly brought suit in federal court for an injunction against the city to prevent enforcement of what they termed a confiscatory service rate. Judge Youmans, of the U. S. court for the Western District of Arkansas, appointed Mr. Southmayd, of Fort Smith, as special master to inquire into the controversy.

### STREET LIGHTING AND POWER

#### New Lighting for Philadelphia.

Philadelphia, Pa.—Through Director Cooke, of the department of public works, the city has gained a victory in its fight to compel the Philadelphia Electric Company to give the city modern high power electric street lamps. The company agreed to install 650 such lights. Immediately after, Mayor Blankenburg signed the ordinance recently passed by councils providing for 1,000 new electric arc lights. The mayor did not feel that he should sign this ordinance, increasing the business of the company with the city, until the company gave the city something in return. The lamps will be placed on ornamental metallic poles of a design approved by the art jury.

#### Result of Competition Suit.

Youngstown, O.—The Mahoning County Light Company won against the Youngstown & Sharon Street Railway Company in Supreme Court at Columbus. The court sustained the light company's motion to dismiss the suit of the railway to enjoin the light company from issuing \$400,000 in stock and \$530,000 in bonds. The railway claimed if the light company went ahead with its stock and bond issue a duplication of light service in Youngstown would ensue and that the value of the railway's holdings would be depreciated.

#### Company May Not Charge for Tapping.

Albany, N. Y.—The public service commission has decided that a gas company cannot charge a customer for tapping the main and for the curb box and curb cock between the main and the customer's service pipe. Accord-

ing to the decision of the commission, these items are capital charges for property which remain with the company and not with the customer. The decision is rendered in the case of the North Buffalo Natural Gas & Fuel Company. Complaint was made by Julius J. Eyring as to the charges mentioned, which amounted to \$4.48. A number of hearings were held in Buffalo before Commissioner Hodson at which the complainant and the company were represented and which attracted much interest from other property owners. The commission's decision not only returns this charge to Mr. Eyring, but orders the company to desist making this charge in similar cases.

#### Natural vs. Artificial Gas Competition.

Harrisburg, Pa.—The public service commission has approved the 40-year franchise ordinance between the People's Natural Gas Company and the borough of Juniata, but struck out the clause giving the gas company the right to manufacture and sell artificial gas if the natural supply ceases. The Altoona Gas, Light & Fuel Company, supplying the territory which the natural gas company seeks to occupy, filed a protest, resulting in the commission's acting. However, the commission held that "no company has the right to expect a commission to protect it against the competition of a product which can be supplied at less than one-half the cost of another product and answer the same purpose."

### FIRE AND POLICE

#### Traffic Police Stand.

Newport, R. I.—The accompanying photograph shows the new traffic police stand just installed here. It is made of wood with brass railings and is being found very effective.

#### Training School for Pittsburgh Firemen.

Pittsburgh, Pa.—The city council has appropriated \$5,000 to build a tower at the Neville street engine house, where a school for firemen will be conducted. Chief J. F. Richards announces there will be a reorganization of the whole department. The plan for teaching the firemen skill and daring is to take an entire company to the fire school. There they will be put through hazardous experience



Courtesy, Newport (R. I.) News.

STAND FOR TRAFFIC POLICEMAN.

as it has been observed in everyday work by Captains J. M. Kane, Alvin Foster, Surgeon D. E. Sable and Chief Richards. Those who lack the requirements necessary for an all-round man will be dropped. At present the majority of the men in the department specialize as hose-men, truckmen, drivers, engineers, etc. About 40 men will be dropped following motorization.

#### **Detroit's Belle Isle Bridge Burns.**

Detroit, Mich.—Belle Isle bridge, connecting Belle Isle and Detroit, three miles from the center of the city, was practically destroyed by fire. Shortly after the outbreak of the fire the center of the bridge collapsed and fell into the river. The fire is said to have caught from a tar wagon crossing the bridge. No loss of life is reported. A city engineer estimated the damage at \$250,000, and said the bridge, the only one which links Detroit to Belle Isle, will have to be entirely rebuilt. The bridge was built in 1889.

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### **MOTOR VEHICLES**

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#### **New Auto Truck Purchased.**

Mount Pleasant, Pa.—Council has purchased a 70 horsepower American La-France tractor fire truck at a cost of \$5,500. The new truck was demonstrated to the council and the department and it proved itself an excellent machine on the hill climbing and pumping tests.

#### **New Apparatus Makes Good.**

Augusta, Ga.—The test of the speed and pulling power of the new motor equipment for fire station No. 7 was very satisfactory. The two new machines, one an engine and the other a truck, were driven up hills and maneuvered in every possible way, and they responded admirably. Chief Reynolds and the councilmen present were very pleased with the new machines.

All of the ordered motor apparatus for the new engine house has arrived and been tested and the new fire station opened. The combination pump is of Seagrave make. It is propelled by a six-cylinder, 80-horsepower engine. It carries a triple combination pump, with a capacity of 750 gallons of water per minute. It also carries a 40-gallon chemical tank, 200 feet of chemical hose, 1,000 feet of 2½-inch fabric hose, two ladders, one of them 20 feet and the other 12 feet; two hand extinguishers, two hooks, two axes, and a door opener. The combination truck, which has been in the city several months, carries a full complement of ladders, a 40-gallon chemical tank, 200 feet of chemical hose, four hand extinguishers and various other appliances.

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### **GOVERNMENT AND FINANCE**

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#### **Straightening Ohio Cities' Finances.**

Columbus, O.—A check is put on cities piling up floating indebtedness, but their ability to pay off existing debts is facilitated by provisions of the bill of Representative Jackson, of Springfield, which has passed the house. The main purpose of the bill, which amends the Longworth municipal debt limit law, is to stop cities from running wild in issuing notes with which to meet operating expenses. Under the bill's provisions cities are permitted to issue five and ten-year bonds with which to take up notes and other certificates of indebtedness and authorize a tax levy for interest and create a sinking fund from which to pay off those bonds on maturity, such levies to be outside the tax rate limits of the Smith law. The authority under which certificates of indebtedness may now be issued is repealed in the Jackson bill, which also provides that all sinking fund levies, other than now permitted to care for the present floating debts shall never exceed the 15 mills' limit in total. Under the Jackson bill, if enacted into law, it is expected that cities will be given the entire 10 mills' levy allowed by the Smith law for operating expenses. The bill retains the provision that 2½ per cent of the tax duplicate cannot be exceeded in the amount of bonds issued without a vote of the people.

It also retains the provision that the total net debt shall not exceed 5 per cent of the duplicate. It reduces from 1 per cent to 1/20 of 1 per cent the amount of bonds a council may issue in any one year and prohibits the issuing of such bonds to the amount of more than \$75,000 for any one purpose. Emergency, refunding, special assessment and waterworks and street intersection bonds are the only bonds which the council will be permitted to issue without a vote of the people, even within the 2½ per cent debt limit.

#### **A New Third Class Pennsylvania City.**

Coatesville, Pa.—The state has issued a charter as a third class city to Coatesville, which will enter the class on January 1 as the result of an election on the question.

#### **To Advertise for City Manager.**

Elizabeth City, N. C.—The city clerk has been instructed by the aldermen in session to advertise for a city manager to take charge of the affairs of the town under the city manager plan which was provided for in the amendments to the city charter made by the last session of the state legislature.

#### **Kokomo Mayor Acquitted.**

Kokomo, Ind.—Mayor George W. Stidger, who was indicted last December for alleged malfeasance in office, was acquitted by a jury in the circuit court. It had been charged that Mayor Stidger issued orders to the police department not to enforce the liquor and gambling laws. The mayor also had been accused of illegally selling one of the city's old fire engines.

#### **Wants State Department of Municipal Affairs.**

Harrisburg, Pa.—A bill creating a state department of municipal affairs has been introduced in the senate. Upon request from any city the department shall draft ordinances of a general character. It shall prepare standard forms for ordinances on matters common to the various classes of municipalities, and shall recommend to the legislature such legislation as will be conducive to better government. The bill provides for a director, at an annual salary of \$5,000, to be appointed by the governor for four years.

#### **Board of Public Works Abolished.**

Superior, Wis.—By a vote of 2,367 to 1,695, the board of public works has been abolished. The duties which have been performed by the board of public works will hereafter be performed by the city commission. It was provided in the commission government law that the board of public works might be abolished by a vote of the people. This board consists of three members appointed by the mayor, and drawing \$25 per month salary, with the commissioner of the street department serving as an ex-officio member.

#### **To Study Commission-Manager Efficiency.**

Springfield, O.—In accordance with arrangements made some time ago, officials representing the state civil service commission have begun upon an efficiency survey of municipal operations under the commission-manager plan, as conducted in this city. Kenneth McKinley and L. L. Fossett, from the efficiency bureau of the state commission, will be in charge. The state commission, through its subordinate department, is gathering data on the cost of government and results obtainable in the various political subdivisions of the state, and the commission-manager plan will be studied in Springfield.

#### **The Finances of Portland, Ore.**

Portland, Ore.—The city government in 1914 cost a total of \$4,654,646, or \$14.744 for each inhabitant of the city, estimating the population at 270,000. Of this sum, \$1,017,456 was spent by the water bureau, or \$3.698 per capita. The water bureau derives its revenue from receipts of water, while the other departments of the city are maintained from receipts from licenses, franchises and fees and from a general tax upon all assessable property. Salaries alone totaled \$2,007,595, or \$7.30 for each inhabitant of the city. Of this, \$314,950, or \$1.145 per capita, went to the em-



ployees in the water bureau. A total of \$21,464, or \$.078 per capita, was paid for special service outside of regular salaries. There was \$34,097 spent in furnishing work for unemployed during the winter. Interest on outstanding bonds totaled \$603,144.

## STREET CLEANING AND REFUSE DISPOSAL

### Pittsburgh's Clean-Up Campaign.

Pittsburgh, Pa.—Pittsburgh has just finished cleaning house, the city's "Be Bright" campaign having started May 3 with a municipal parade through the downtown streets. Posters and stamps as shown in the illustration were very extensively used. The health and safety departments of the city were enlisted in the campaign and co-operated with a general committee from civic and business organizations. The anti-dirt crusade continued until May 15, a program of activities for each day having been laid out in advance.

Monday and Tuesday, May 3 and 4—Fire danger days. Make a thorough inspection of premises, remove all accumulations in attics and basements that might cause fires.

Wednesday and Thursday, May 5 and 6—Front yard days. Rake lawns, exterminate weeds, plant early flowers, clean walks and gutters.

Friday and Saturday, May 7 and 8—Back yard days. Clean up alleys, sow flower seeds, repair terraces, etc.

Monday and Tuesday, May 10 and 11—Repair days. Repair porches, porch furniture, lawn swings, screens, tree guards, fences, etc., and put up awnings and screens.

Wednesday and Thursday, May 12 and 13—Paint days. Paint and brighten up inside and out, porches, screens, fences, garbage cans, wood work, furniture, tree guards, etc.

Friday, May 14—Vacant lot day. Help clean up all vacant lots in your neighborhood.

Saturday, May 15—Inspection day. Devote this day to any unfinished work and have everything spick and span to close campaign.

### Ash Collection Costs Reduced.

Milwaukee, Wis.—Superintendent Davis, of the department of street sanitation, has issued a statement showing that ashes were removed from residences in January, February and March under a new system with \$8,454.32 less expense than was incurred under the old plan in the corresponding months last year. The report states that 128,342

cubic yards of ashes were removed, 3,056 cubic yards more than the quantity removed during the preceding period. The cost during the three months in 1914 was \$93,709.59, and this year \$85,255.87. This economy is regarded by Mr. Davis as justification of the ordinance which reorganized the department, decreasing the number of ward foremen and dividing the city into six districts, each under the direction of a supervisor.

### Cost of Clean-Up.

Middletown, O.—Health Officer G. D. Lummis and Street Commissioner Hughes have submitted to the city commission a report on the recent clean-up campaign. The city gave 1,333 loads of trash, and the collection cost \$524.80, or 39.3 cents per load.

## RAPID TRANSIT

### Car Strike Ties Up Detroit.

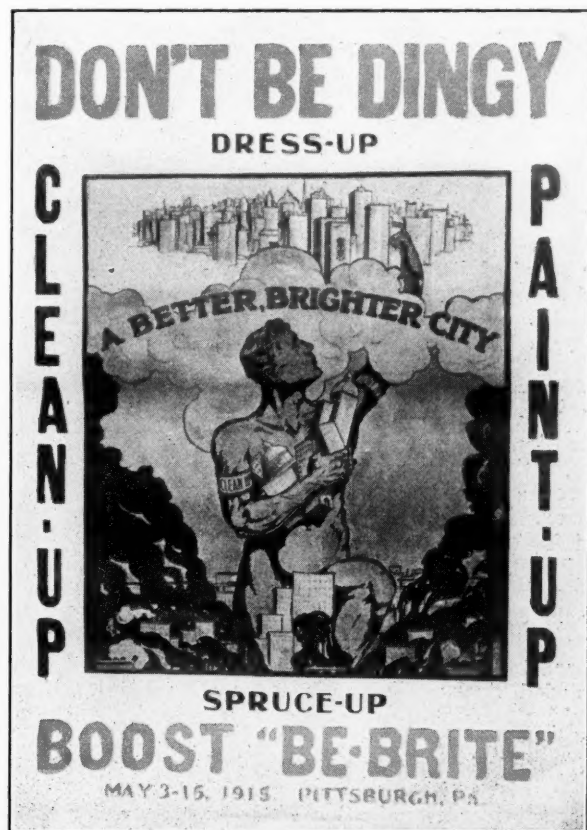
Detroit, Mich.—This city found itself without trolley transportation for a day and a half when the motormen and conductors of the street railways went out on strike because of the discharge of a motorman. The situation was saved, however, when by unanimous vote the strikers of the Detroit United Railway agreed to a plan for settlement of the trouble. The plan was drawn up by Mayor Oscar B. Marx and Charles B. Warren, president of the Detroit Board of Commerce, after conferences with officials of the company and the striking car men. The immediate resumption of car service was provided for, and the appointment of an arbitration board of three members to decide upon the merits of the demands of the employees.

### State Legislation and the Jitney.

Albany, N. Y.—The senate has passed the Thompson bill, placing jitney busses under the supervision of the Public Service Commission. In its original form, the Thompson bill excluded New York City. The bill was later amended to cover New York, too. Under its provisions, jitney bus companies, before beginning operation, must secure not only the consent of the Board of Estimate, but also a certificate of convenience and necessity from the Public Service Commission. The roving jitney, however, will not be compelled to seek the consent of property owners along routes it proposes to cover.

Denver, Colo.—By virtue of a bill which has passed the house on third reading all automobile passenger and freight lines become "public utilities." That means that they will be subjected to the same regulations that encompass common, ordinary trolley lines and steam railroads. The new law means the managements are liable for damages in case of accidents. It also means, in the opinion of leading lawyers, that the lines will be compelled to take out franchises; and if the people of the cities affected vote against the granting of such franchises, the jitneys will stop.

Annapolis, Md.—That the jitney bus "is subject to the jurisdiction and authority of the Commission in every respect that the steam car or the electric car is, except so far as essential differences of structure and operation necessarily limit the application to it of provisions of the Public Service Commission law," is stated in an opinion rendered the Commission by William Cabell Bruce, general counsel. It is also declared that as the jitney bus differs from the railroad or street car in that it does not move within definite physical boundaries and over a prescribed track in the public highways, it does not require an exclusive franchise or right to use the highways. The provisions of the law, says Mr. Bruce, empower the Commission "to subject jitney busses to some settled system of inspection; to require the owners of such busses to operate only vehicles safe and serviceable in point of construction, equipment, state of repair and management; to require such owners to operate their vehicles in such a well-ordered and systematic way as to best promote the public security and convenience; and to prohibit such owners from overloading their vehicles or pursuing or lapsing into any other dangerous or negligent practice of such a character as to imperil the public safety or to impair the public comfort." He also holds that the Commission has the power to regulate the rates of fare and the issuing of stocks and bonds and to investigate accidents.



Courtesy, Pittsburgh Industrial Development Commission.  
ADVERTISING CLEANLINESS.

## LEGAL NEWS

### A Summary and Notes of Recent Decisions— Rulings of Interest to Municipalities

#### Governmental Functions—Liability for Injury.

*City of Indianapolis v. Williams.*—A city is not liable for injuries from its failure to perform a governmental function, or from its discretionary acts.—Appellate Court of Indiana, Division No. 2, 108 N. E. R., 387.

#### Change of Grade of Streets—Damages to Abutting Property.

*Labodie et al. v. Village of Ford et al.*—In the absence of statute, which makes a previously established grade a prerequisite, abutting owners cannot recover damages against a municipality for changing the grade of the street.—Supreme Court of Michigan, 151 N. W. R., 1046.

#### Street Improvements—Validity of Contract.

*Stanwood et al. v. Carson et al.*—The contract for a street improvement is not invalidated by inhibitions against the contractor removing stakes and monuments, without consent of the city engineer, or provision that the contractor shall bear any loss from unforeseen difficulties or action of the elements.—Supreme Court of California, 147 P. R., 562.

#### Acceptance of Streets—Evidence.

*Colebank v. Standard Garage Co.*—In an action wherein the issue is whether defendant negligently injured plaintiff by driving an automobile on him in a public highway, proof that the place where the injury was inflicted was a street opened to the public and used for travel by the public generally, is sufficient. Acceptance by the public authorities need not be shown.—Supreme Court of West Virginia, 84 S. E. R., 1051.

#### Liability for Nuisance—Independent Contractor.

*Herman v. City of Buffalo et al.*—While a municipal corporation, in maintaining an engine house in an unsafe condition in course of construction upon its land, is answerable for the acts of its servants, it is not liable for the acts of competent independent contractors or subcontractors or their servants in creating such nuisance; an owner not being liable to third persons for injurious acts of independent contractors, unless the acts are imposed by statute on the owner, and cannot be delegated so as to exempt him from liability, or the contract or the thing contracted to be done is necessarily unlawful, or the injury is a direct and natural result of the character of the work required of the independent contractor by his contract or the direction of the owner.—Court of Appeals of New York, 108 N. E. R., 451.

#### Proceedings to Enforce Taxation—Temporary Injunction.

*Mayor and Town Councilmen of Vinemont v. Allison et al.*—Under Code 1907, § 1313, providing relative to municipal taxes that after the assessment has been corrected, it has the force and effect of a judgment and after delinquency may be enforced by execution, section 1319, providing that within three months after taxes shall become delinquent a list shall be made out of the property the taxes against which are delinquent, section 1320 providing that such lists shall be filed with the register in chancery, who shall issue a summons as in chancery cases, and section 1322, providing that if no pleading setting up a defense shall be filed, a final decree shall be made adjudging such property liable for such taxes and directing a sale thereof, and that if any defense is made the court shall proceed to give relief under its own rules of procedure, where a municipality instituted such a proceeding in the chancery court, and the taxpayers filed defenses, whereupon the cause was regularly continued, the chancellor properly granted an order restraining the officers of the municipality from enforcing the collection of such taxes under section 1313, as it was undertaking to do, in order that its jurisdiction, which had already attached, might be protected in the processes of adjudging the rights of the parties.—Supreme Court of Alabama, 68 S. R., 142.

#### Powers of Charter.

*West Linn v. Tufts, County Treasurer.*—While Laws 1913, p. 689, authorizes municipalities to amend their charters, a self-constituted city cannot, by amending its charter, require the county treasurer to pay over to it road taxes collected from property within its boundaries.—Supreme Court of Oregon, 146 P. R., 986.

#### Public Improvements—Payments.

*Buck et al. v. Town of Monroe et al.*—Under Laws 1911, p. 475, § 55, providing that when a local improvement is ordered it shall include the cost of the part included within the limits of any street intersections to be assessed against property in the improvement district, a city might pay for the paving of such intersections out of its general fund.—Supreme Court of Washington, 147 P. R., 432.

#### Negligence in Performing Governmental Functions—Liability.

*Ackert v. City of Minneapolis.*—Cities and villages are liable for injuries resulting from dangerous conditions in their streets; but, with this single exception, municipalities are not liable in damages for negligence in performing their governmental functions, unless such liability has been imposed by statute.—Supreme Court of Minnesota, 151 N. W. R., 976.

#### Public Parks—Injury to Minor.

*Mayor and City Council of Nashville v. Burns.*—A municipal corporation, owning and operating a park and playground for the benefit of the public, under charge of a park commission, with police assigned to insure good order, was engaged in the public duty of preserving and maintaining the public health, and not in any proprietary or ministerial duty, and hence was not liable to a minor, struck by a swing which other boys swinging too high, had turned over.—Supreme Court of Tennessee, 174 S. W. R., 1111.

#### Taxation—Special Levy for Park Purposes.

*Perkins et al. v. People ex rel. MacFarland et al.*—Denver city charter, § 104a, empowering the park commission to acquire and improve land for parks, and providing that the city council shall annually and for five years assess and collect a special levy of half a mill, the proceeds of which shall be set aside as a special park fund, and shall thereafter annually collect a special levy for such purposes, not exceeding half a mill, is, within the five-year period, mandatory and compulsory, and the special levy must be at the rate of half a mill.—Supreme Court of Colorado, 147 P. R., 356.

#### Public Improvements—Assessment of Damages and Benefits—Change in Improvement.

*Fifteenth Street Inv. Co. et al. v. City and County of Denver.*—City and County of Denver Charter, § 84, gives the board of public works exclusive power to lay out, open, and change streets, subject to approval by ordinance. Section 322 provides that, whenever the council shall, by ordinance, establish and open any street, the city and county may condemn the necessary property, and the proceedings for the assessment of damages and benefits shall be as provided by general law. An ordinance was adopted for the extension of a street for several blocks, which provided that, if the general benefits assessed against the city should exceed a named amount, the proceedings should be dismissed. Proceedings for the condemnation of the property and for the assessment of the damages and benefits were instituted, and thereafter a report of the commissioners was approved which assessed the damages and the benefits for the extension of the street for a distance one block less than was fixed by ordinance, and the proceedings were dismissed by the city attorney as to the property within the excluded block. The general benefits assessed against the city, for the distance the street was opened, was the maximum amount fixed by the ordinance. Held, that neither the commissioners nor the court had power to change the extent of the improvement, since that was a matter for the exclusive determination of the council, and the award, being for an improvement not authorized by the council, is invalid.—Supreme Court of Colorado, 147 P. R., 677.



## NEWS OF THE SOCIETIES

### Calendar of Meetings.

May 18-20.

**SOUTH CAROLINA STATE FIREMEN'S ASSOCIATION.**—Thirteenth annual convention, Greenwood, S. C. President, Chief Louis Behrens, Charleston.

May 25-28.

**INTERNATIONAL ASSOCIATION OF CHIEFS OF POLICE.**—Cincinnati, O. F. J. Cassada, secretary-treasurer.

June 2-4.

**SOUTHERN GAS ASSOCIATION.**—Hotel Isle of Palms, Charleston, S. C.

June 1-3.

**CONFERENCE OF MAYORS AND OTHER CITY OFFICIALS OF NEW YORK.**—Sixth annual convention, Rensselaer Inn, Troy, N. Y. Secretary, William C. Capes.

June 14-16.

**SOUTHWESTERN WATERWORKS ASSOCIATION.**—Annual Convention, Galveston, Tex. Secretary, E. L. Fulkerson, Waco, Tex.

June 16-19.

**TRI-STATE WATER AND LIGHT ASSOCIATION of the Carolinas and Georgia.**—Annual Convention, Asheville, N. C. President, F. C. Wyse, Columbia, S. C. Convention Manager, W. F. Stieglitz, Columbia, S. C.

June 22.

**MAYORS' ASSOCIATION OF CONNECTICUT.**—Bridgeport, Conn.

Aug. 2-6.

**GOOD ROADS CONGRESS.**—San Francisco, Cal., under the auspices of the Tri-State Good Road Association.

Aug. 31-Sept. 3.

**INTERNATIONAL ASSOCIATION OF FIRE ENGINEERS.**—Annual Convention, Cincinnati, O.

Sept. 13-19.

**PAN-AMERICAN ROAD CONGRESS.**—Held by American Road Builders' Association and the American Highway Association. Oakland, Cal.

September 20-25.

**INTERNATIONAL ENGINEERING CONGRESS.**—Am. Soc. C. E., Am. Inst. Min. E., Am. Soc. Mech. E., Am. Inst. E. E. and Soc. N. A. & M. E., San Francisco, Cal. Secretary, W. A. Catell, Foxcroft Building, San Francisco, Cal.

Sept. 22-24.

**MASSACHUSETTS STATE FIREMEN'S ASSOCIATION.**—Annual convention, Haverhill, Mass. George Wilson, Lynn, Mass., Chairman of Committee.

October 12-15.

**AMERICAN SOCIETY OF MUNICIPAL IMPROVEMENTS.**—Annual Convention, Dayton, O. Secretary, Charles Carroll Brown, 702 Wulsin Bldg., Indianapolis, Ind.

November 17-19.

**NATIONAL MUNICIPAL LEAGUE.**—Annual Convention, Dayton, O. Secretary, Clinton Rogers Woodruff, 705 North American Bldg., Philadelphia, Pa.

Dec. 27-Jan. 8, 1916.

**SECOND PAN-AMERICAN SCIENTIFIC CONGRESS.**—Washington, D. C., Department of State, Washington.

### AMERICAN WATER WORKS ASSOCIATION.

The thirty-fifth annual convention of this association was held at the Gibson Hotel, Cincinnati, O., on May 11 to 14, inclusive. A special train of eight sleepers carried the members from New York, Newark, Harrisburg and other eastern cities along the line of the Pennsylvania, who reached Cincinnati early Monday morning, for which date the preliminaries of registering, meeting of the Executive Committee, etc., were scheduled. When the convention proper opened on Tuesday, about 250 had registered, and before the close of the day the list of active and associate members who had registered included 393 names, which were increased later to a total of about 280 active members and 170 associate members; also 298 guests, a considerable percentage of which were from Cincinnati and neighboring cities.

On Tuesday the convention was called to order by John W. Hill, chair-

man of the local committees; an address of welcome was delivered by Mayor Frederick S. Spiegel, and Philip Fosdick, director of public service, also gave an address. Following these President Earle read his annual address, the principal theme of which was co-operation between the several classes of engineers and scientists which are called upon to advise cities as to the best methods of supplying satisfactory water; co-operation also between engineers engaged in similar lines, in order that each may benefit by the experiences of the others, ending with a plea for a union or co-operation of all local water works societies with the national society. One result of such co-operation might, he hoped, be a uniformity in rates for water or at least in method of fixing such rates, in which way he believed a fairer deal for all consumers might be obtained and considerable friction between consumers and company or department be eliminated.

Following the president's address, the executive committee gave its report, the most interesting features of which were that it had admitted a section for the state of Iowa and approved of a constitution for this section. Applications had also been received from the Central States Water Works Association and from a California section. (The former association was admitted as a section of the American Water Works Association at a later meeting.) The committee recommended that John Caulfield of St. Paul be made an honorary member of the association, which action was taken by the association. Mr. Caulfield was said to have attended more conventions than any other member of the association, this being his twenty-sixth.

The canvassers of the letter ballot for officers for the coming year reported that Nicholas S. Hill, Jr., of New York, was elected for president with 590 votes; Leonard Metcalf of Boston for vice-president; J. M. Caird of Troy was re-elected as treasurer, and C. E. Davis and C. H. Rust received the highest number of votes for trustees.

The executive committee announced that it had received a suggested amendment to the constitution relative to the method of nominating officers, and also itself submitted another amendment covering the same point. These two suggested amendments were as follows:

Amend Article VI by striking out all of Section 3 and substituting therefor the following:

Section 3. On the third day of each annual convention, or on a day to be designated by the Executive Committee, the convention shall elect a Nominating Committee, whose duty it shall be to suggest nominations for the officers of the convention for which the constitution provides there shall be a letter ballot of the membership. Said Nominating Committee shall consist of five Active, Honorary or Corporate Members, representing the following territorial distribution of the membership, to wit:

(1) The New England States, (2) the Mid-

dle States, (3) the Southern States, (4) the Central States, (5) the remainder of the United States, and all territory outside of the United States. The nomination for members of the Nominating Committee shall be made on floor of the convention, first by placing in nomination of an Active, Honorary or Corporate member to represent the above geographical subdivisions who may be selected by the Active, Honorary or Corporate members from said geographical subdivision in attendance at the convention, and if such nomination is not so made, a nominee, representing any geographical subdivision failing to so submit a name, shall be made from the floor of the convention. The member of such nominating committee whose membership in the Association is the oldest shall be Chairman.

The Nominating Committee, so elected by the convention, shall cause to be mailed to the membership, within six months after the convention at which they are elected, a list of the nominees for respective officers of the Association, for which the constitution provides there shall be a letter ballot of the membership. Up to within three months of the time of holding the next annual convention, additional nominations may be made by request to the Secretary, signed by at least twenty-five Active, Honorary or Corporate members, and upon the receipt of such request, the Secretary shall add such additional nominees to the final ballot to be prepared by him. The nominees of the Nominating Committee shall head such final ballot for each office, and any additional nominees for the respective offices shall be placed under the nominees of the Committee in alphabetical order.

Amend Article VI, Section 4, by striking out the words "Twenty-one days" in the second sentence of the first paragraph of said section, and substitute therefor, "two months," so that this paragraph shall then read as follows:

"Section 4. Election shall be by letter ballot. At least two months before the date of the annual meeting, a ticket shall be mailed to each member of the Association entitled to vote."

Submitted by the following above members: Morris R. Sherrerd, J. Walter Ackerman, Thomas F. Halpin, F. W. Cappelen, Alex Milne, E. E. Davis.

Instead of above the Executive Committee recommend to substitute for the second paragraph of Section 3, Article VI, the following:

The three members who shall have received the greatest number of nominating ballots for the office of President, the three members who shall have received the greatest number for Vice-President, the three members who shall have received the greatest number for Treasurer, and the six members who shall have received the greatest number for Trustee, shall thereby be placed in nomination; provided that no member shall be placed in nomination for more than one office; and provided further that no member shall be placed upon the ballot who shall have received less than twenty-five nominating ballots, and if there be a tie vote among the number required to be placed in nomination, an additional number of names to cover such tie shall be placed in nomination; any member who shall be nominated for more than one office shall have his name placed upon the ballot for that office for which he shall have received the highest number of nominating ballots.

After a few minutes' discussion of these, it was voted to postpone action until 11 o'clock Thursday morning. Another change suggested was that of having the secretary and editor selected by the incoming executive committee rather than the outgoing, and this was adopted.

The secretary reported that the present membership of the society was 1,147 and that during the year 114 had been dropped for non-payment of dues, this being practically the total for two years, since the rule of dropping when two years in arrears had been changed a year ago to dropping when only one year in arrears. The membership committee reported that 193 active members, 10 associate members and 7 corporate members had been admitted during the year, of which 69 were from Illinois and that a considerable percentage of these had been secured by Edward Bartow. The treasurer's report showed that there had been an income during the year of \$11,837 and

that the balance a year ago of \$1,064.14 had been increased to a balance at the beginning of April of \$4,268.

Following this several committees reported. That on electrolysis had no special report but was continued. The committee on standard specifications for cast iron pipe and specials stated that it had for two years been endeavoring to secure a world standard by obtaining an agreement between European and American standards, but that the war had interfered with the conclusion of these negotiations. The committee on standard specifications for wrought iron pipe made no report but called attention to the loss to the society through the death of one of its members, Emil Kuichling, and the society passed a vote of condolence with the family and appreciation of its own loss in Mr. Kuichling's death. The committee on standard specifications for hydrants and valves reported that it had been meeting with a committee of the New England Water Works Association appointed for the same purpose, that there were still two or three points on which they had not reached perfect agreement, but that they hoped that by the next convention they would be able to report that both societies had agreed on all points. The committee on water consumption referred to its report printed in the March Journal of the association and Messrs. Cole and Chester of the committee stated emphatically their belief in the importance of the subject and at Mr. Chester's suggestion was authorized and requested to compile and promulgate a new form for reporting the essential features of water works consumption. President-elect Hill and Vice-President-elect Metcalf closed the session with brief addresses expressing their appreciation of their election.

On Tuesday afternoon the secretary announced that the formalities had been concluded admitting the Central States Water Works Association as a section of the American Water Works Association, thus adding about 100 members to the latter association. Edward Bartow, whose paper, entitled "Some Observations of European Water Works Operation and Sewage Disposal Plants," had been printed in the March Journal, showed on the screen a number of slides illustrating such plants, with a brief running comment. D. F. Fulton's paper on "Yonkers Water Supply," which also had been published in the journal, was then discussed by Edward Wegman. John W. Alvord read a paper dealing with a recent decision of the Appellate Court of the State of New York concerning allowances for improved pavements over water mains in connection with valuation of water works plants. This was discussed by F. H. Luce, F. W. Cappelen, H. C. Hodgkins, Morris Knowles, J. N. Chester, J. W. Ledoux, Pat. Gear and others. Mr. Alvord maintained that the decision of the court that the value of existing pavements laid since the laying of the mains should not be considered in es-

timating the reconstruction value of the system was illogical and untenable; which view was vigorously opposed by one or two of the speakers but upheld by others. A considerable part of the discussion consisted of comparing ideas as to the fundamental principles to be followed in valuing water works properties for various purposes.

In the evening session Daniel D. Jackson, in a paper entitled "The Softening of Water by Filtration Through Artificial Zeolite Gravel," described the methods of manufacturing Permutit as followed in the plant at South Brooklyn, N. Y., describing the various kinds of Permutit manufactured and the purposes for which they were employed in removing mineral impurities from water, this being illustrated by lantern slides showing the apparatus used in the manufacture. This paper was discussed by Edward Bartow and others. J. W. Ellms also gave a history of the Cincinnati water works, illustrating this by lantern slides.

Wednesday morning's session was opened with a report of the committee on Prevention of Stream and Lake Pollution, following which B. M. Wagner's paper entitled "The Acquisition of Private Water Plants by Municipalities" was discussed by Edward Wegman, who stated his opinion that in the case of pumping plant, no depreciation should be considered for the first five years of its life, since during that time the plant was probably improving in service rather than deteriorating, and that following this a depreciation of 3 per cent per annum would be about right. He considered, and stated that other engineers had expressed it as their opinion, that a life of about 100 years would be proper for cast iron mains, although in one case at least a city had fixed it at 75 years. Twenty-five years for the life of fire hydrants also was recommended by him. Mr. Diven stated that he had never known a water works pump to wear out, but that it was generally discarded because its capacity was exceeded or because modern invention had produced more efficient ones.

Following this paper, the finance committee submitted its report and recommended that the society create a reserve fund which shall be invested in reliable securities, and that the present state of the treasury permits the beginning of such a fund. It also submitted a budget containing \$550 for convention purposes, \$1,500 for the editor of the journal and secretary, \$5,000 for the journal and \$500 for the sections, and recommended that the rule be adopted that no appropriation be exceeded or transferred to any other department. H. C. Hodgkins read a paper of some length entitled "Franchises of Public Utilities—As They Were and As They Are," which was largely historical. The committee on depreciation reported progress, stating that it desired to receive reports from state commissions and committees of other societies which were considering the subject before making a

final report. Charles P. Hoover then read a paper entitled "The Manufacturing of Alum at the Columbus Softening and Purification Works," in which he described a method developed by him for manufacturing alum syrup at the water works plant and using it in that form, thus saving four expensive operations involved when the alum crystals are used and thus securing an equally satisfactory result at much less cost. It was suggested that the companies might ship alum syrup to water works plants instead of alum crystals, but a representative of an alum manufacturing company stated that this was impracticable because of the very large weight of water on which they would have to pay freight.

Eleven o'clock had been assigned to the selection of place for holding the next convention as a special order of business and this matter was then taken up. Invitations were delivered on the floor from New York, Birmingham, St. Louis, Detroit, Richmond and Erie, while written invitations were received from Kansas City and Atlantic City. The president, as a member of the committee, reported that New York, St. Louis and Detroit were the only cities which had complied with their rules by submitting formal invitations stating definitely what hotel service would be available, what facilities for convention hall and exhibits and what other inducements were offered, and therefore recommended that these three cities alone be considered; presenting the written invitations from these cities, giving in detail the hotel and convention arrangements which were offered, and discussing the possibility of increasing the membership and obtaining technical information at the several cities. The ballots when collected showed that 273 votes had been cast, of which New York received 142, St. Louis 94, Detroit, 33, Richmond 3 and Erie 1. The Birmingham representative had previously withdrawn Birmingham's invitation when he learned that it was considered to be irregular in form.

Following this Morris R. Sherrerd presented the following resolution:

WHEREAS, the operation and management of water plants are, or should be, conducted in the interest of their stockholders, which stockholders in the case of a municipally owned plant, are the water takers or inhabitants of such municipality, and

WHEREAS, The accounting methods prescribed by most, if not all, of the Public Utilities Commissions of the various states require the charging of both sinking fund and depreciation against operation; and

WHEREAS, When the income from such plant is sufficient to provide for both sinking fund and depreciation, revenue which might otherwise justify a reduction of water rates, is by this method excluded from consideration in the making of such rates; and

WHEREAS, It is not obligatory for private water companies to provide sinking funds for their bond issues, and earnings in excess of depreciation are distributed by them as dividends, and

WHEREAS, this method tends to place a municipally owned plant at a disadvantage and prevents its stockholders from getting their dividends in a reduction of rates.

THEREFORE, BE IT RESOLVED, That it is the sense of the American Water Works Association, in Convention assembled, that the attention of the Public Utilities Commissions of the various states be called to the inequalities resulting therefrom, and that they be re-



quested to modify their requirements regarding this feature of accounting.

AND BE IT FURTHER RESOLVED, That the Secretary is hereby instructed to forward a copy of this resolution to the various Public Utilities Commissions throughout the country.

J. N. Chester considered that it would be necessary to include interest on the actual investment also, in order to make the resolution fair to the private plants. As it was time to adjourn, further discussion on this resolution was postponed and the resolution made a special order of business for Thursday morning. There was no further business on Wednesday, the visitors spending the afternoon at the Cincinnati water works filtration plant.

On Thursday the session opened with a paper by Scotland G. Highland entitled "Plumbing Code and Control of Plumbers," which was discussed by several members. Mr. Reimer advocated the payment of a fixed price from main to curb and fixed rate per foot from curb to house, stating that in East Orange, N. J., the city charged \$20 for a permit to connect, which included all costs up to the curb, the pipe up to the curb being considered as a part of the distribution system. This section of the service was made of  $\frac{1}{2}$ -inch AAA lead pipe, but as this cost twice as much per foot as 1-inch galvanized pipe of the highest grade, the latter is used from the curb into the house. H. B. Morgan stated that in Springfield, Ill., all of the service to the house and any which were covered up by the floor or otherwise was always constructed of lead, as he believed galvanized pipe when not in plain view was likely to leak. T. A. Leisen believed that lead pipe should be used all the way to the property line if it was considered necessary to the curb, since if necessary at all the additional cost for the remainder of the service would be small compared with the risk involved. B. F. Souder stated that in Atlantic City lead-lined iron pipe is laid to the curb, but before obtaining a permit from the water department one must be obtained from the street department for opening the street. The city owns and controls its meters and places them at the curb whenever possible. W. F. Wilcox stated that he had collected data from a large number of water works and believed that very few can account for more than 85 per cent of the water pumped; any which could account for more than this might be considered as having an excellent system, while those which accounted for less than 75 per cent had a poor system in this respect. He claimed that there was not enough pure iron pipe in the country to provide water works services, most of that so considered being in reality low carbon steel; but this was contradicted by two or three of the members who stated that they knew of firms which would furnish all of the iron pipe desired and three different methods for distinguishing iron pipe from steel of any degree of carbon were described by different members, these consisting of a dilute acid test, an emery wheel

test and a cutting test. The importance of allowing for slip of engines was emphasized by one or two members, one stating that he had found a pumping engine with 100 per cent slip not very long ago.

A paper entitled "Assessing Cost of Extensions in a Municipally Owned Plant" was then read by D. A. Reed, in which he advocated assessing on abutting property the estimated cost of a 6-inch main and paying the balance of the cost of any main as part of a general assessment; the assessment made to be paid with the water rent, and in the case of unoccupied or unconnected property to be paid in a lump sum or in the form of annual rental.

Although there were still five papers on the program, the hour had been reached for the special order of business, the voting on suggested amendments to the constitution and on Mr. Sherrerd's motion relating to the sinking fund reserves. The two amendments to the constitution were discussed at considerable length and a number of members advocated still a third method of nominating officers; and finally a vote upon the two motions resulted in unanimous adoption of the one recommended by Messrs. Sherrerd, Halpin and others providing for a nominating committee with a member of said committee representing each of five sections of the country. As this would apply to the officers to be elected previous to the next convention, therefore the nominating committee would according to this amendment have to be elected at this convention, and such election was made a special order for 5 o'clock Thursday afternoon.

Mr. Sherrerd's motion on sinking fund reserves was then taken up and J. N. Chester again stated his belief that interest on the investment should be included. Mr. Sherrerd was willing to accept as part of his motion interest on the bonds. Mr. Chester also suggested that interest be calculated at 7 per cent, which Mr. Sherrerd considered unnecessarily high. Two amendments to the motion having been voted down, it was unanimously voted to refer the matter to the Executive Committee to be reported upon at the next convention.

Thursday had been set aside as superintendent's day, the papers assigned for the morning having been largely of a practical nature and the afternoon having been set apart for a discussion of questions which had been submitted to the secretary and also of topical discussions which had been proposed. Owing to the delay of half an hour in starting the morning session and especially to the large amount of time taken up by the discussion of the constitutional amendments and the motion on sinking fund reserves, only one of the six papers assigned for the morning had been covered, and the afternoon session was opened promptly with a continuation of the discussion of the paper read during the morning,

during which it was stated that the New Jersey Public Service Commission compels private companies in that state to lay mains for serving consumers if they will guarantee an income of 10 cents a foot a year for five years. Jacob Klein then read a paper entitled "How to Determine the Size of Tap and Meter," recommending the use of the floor area of the building and suggesting that for the average residence a  $\frac{5}{8}$  inch pipe be used for 7,500 square feet of floor area or less, a  $\frac{3}{4}$  inch pipe up to 15,000, two  $\frac{5}{8}$  inch taps for between 15,000 and 20,000, four  $\frac{5}{8}$  inch taps or their equivalent for between 30,000 and 40,000; the area used being the total over-all area of the building. Special considerations would be taken of unusually low head which would require larger pipes and of other special conditions, such as special demands in the building, etc. W. E. Haseltine presented a paper entitled "A Mercury Column Alarm for Standpipes" which, at the request of the author, was read by title only on account of the crowded condition of the program. The committee on Standard Fittings for Water Meters reported that they had held meetings with the manufacturers and had reached practical agreement. Owing to the comparatively few numbers of meters larger than  $1\frac{1}{4}$ -inch, they did not think it so necessary to endeavor to fix a standard length or connection for the larger sizes.  $7\frac{3}{8}$  inches was suggested as the length from end to end of spuds for a  $\frac{5}{8}$  inch meter, but one manufacturer stated that this would be a trifle too short for his meters and would require an entirely new pattern if adopted. All, however, agreed on 9-inch length for  $\frac{3}{4}$  inch meter and  $10\frac{3}{4}$  inches for a 1 inch meter. For the thread, the committee recommended the use of Briggs standard straight thread, using the next size to that of the nominal size of the meter. For large meters there was a question as to whether flange or thread joints were preferable. The manufacturers state that most of these meters are sold with female threads, but the committee felt that there were considerable advantages in flange couplings. It admitted, however, that a flange adds to the expense of the meter and that, unless the flange be made quite heavy, it might be broken by putting too much strength into screwing up the bolts connecting flanges and a broken flange would mean a useless meter. They made no final recommendation on this point.

C. W. Wiles then read his paper entitled "Water from Gravel Wells," in which he described trouble with air sucked in by the pump which was probably drawn into the well strainer by lowering the ground water below the top of the strainer openings. W. E. Hazeltine of Ripon, Wis., suggested that this difficulty of sucking air might be overcome by constructing galleries to receive the flow of the wells. John in Indiana a combination well was W. Moore of Indianapolis stated that

used, a pipe being driven into the gravel and in this a smaller pipe inserted which carried a strainer covered with a screen; after which the outer pipe was removed; this permitting the strainer and screen to be lowered into the gravel without damage.

E. B. Black read a paper more or less general in its nature entitled "Difficulties in the Designing and Operation of Medium Size Water Works Systems," many of these difficulties being connected with the ignorance of those who are placed in charge of the systems.

The question box was then taken up, the questions which had been submitted being as follows:

1. Experience in the use of caps instead of plugs on dead ends and unconnected drainage pipes—Is there any economy or advantage in the use of such caps?

2. What legal right has a water company to the use of public streets after the expiration of its franchise?

3. What experience have you had in the use of lead wool for joints in cast iron pipe? Is it as economical and satisfactory as melted pig lead?

4. Is it your practice to test new water meters or meters repaired at the factory, or do you rely on the factory tests? If tests of such meters are made, do they indicate that the new or factory repaired meters are accurate, or not?

5. Are meter bills of municipal water works a lien on the property? If so, how are they regulated?

Concerning question 2 there was a little discussion, but it was pointed out that the answer would depend upon the terms of the franchise, the city charter, state laws, etc. In answering No. 3 Mr. Diven stated that he now used it altogether where there were only two or three joints to be made, such as in setting hydrants, as it was cheaper and simpler than having to melt lead for these few joints. In one instance, where a main was carried under a railroad yard, about half the length was laid with poured joints and the other half with lead wool; and it was found later that all of the poured joints were leaking (due probably to the jarring of the trains overhead) but none of the lead wool joints were found to leak. Oscar Bulkeley of Rockford, Ill., used lead wool when possible, but he found that the calkers refused to use it as a standard joint since it involved too hard work, the amount of calking required being considerably more than that for a poured joint. It was suggested that a pneumatic calking machine would meet this objection.

Replying to question 4, it was stated that Detroit tests all its meters itself and seldom finds them with more than 1½ per cent error. A number of topical discussions were suggested, a printed list which was distributed containing 21 of these. Owing to the shortness of the time, however, only the first six were considered. The first had to do with experience with different materials for service pipes, which

subject had previously been discussed at some length. Mr. Wilcox stated that low carbon steel is as good as true iron and is less expensive, but several other members contradicted this statement, citing instances to show that wrought iron had twice as long a life as steel. Under the head of "Care of Valves" one member stated that he used lead wool for packing valves both with and without lubricant and found it very satisfactory either way. R. W. Parlin stated that the valves used by him as received from the manufacturers generally were poorly packed and he always repacked them. In discussing the question of who should own meters, H. P. Bohmann, of Milwaukee, stated that there were in that city 60,000 meters which were owned by the consumers, but the city wishes that it owned them itself. When metering first started, the city owned the meters, but a number of plumbers, who wished to sell the meters to consumers and secure the profit thereby, used sufficient influence to secure the private ownership of the meters. Several other members stated their firm conviction that the city should own the meters, only one member advocating private ownership of them.

On Thursday evening Albert Blauvelt delivered an illustrated lecture on "City Fire Limits," in which he stated that during large fires no water ever reached the heart of the fire and that fire departments could therefore only confine the spread of the fire along the sides, the heat being too great when any wind was blowing for them to stand in the path of the fire and prevent its forward progress. Therefore, it was desirable that the district of greatest risk, where possible losses warranted the expense, should be provided with means for automatically checking the fire, for which one or two lines of buildings surrounding this district provided with complete and effective sprinkler systems was apparently his solution.

John D. Kilpatrick, in a paper dealing with "Artesian Wells and Methods of Pumping Them," stated that "water finding" by the use of twigs or other mystical or magical appliances were all fakes, explaining the methods employed by some of the charlatans. For wells which are too deep for direct suction, he recommended the air lift rather than deep well pumps. This same idea was further developed in the next paper, by John Oliphant, entitled "Pneumatic Pumping as Applied to Municipal Plants," in which he went more or less thoroughly into the technical discussion of air lift plants, the amount of air, velocity of flow, depth of well, etc., which would give maximum efficiency for any given case. Both of these speakers expressed their belief that, although the air lift plant was admitted to be low in efficiency as compared with a good direct acting pump, if properly designed and operated it was more efficient than any of the deep well pumps.

During the morning and afternoon of Thursday a chemical and bacteriological section of the society read and discussed papers in another room. Two of the papers, "Dry Feed of Chemicals in Water Purification," by W. F. Montfort, and "Examination of Water on Railroad Trains," by Edward Bartow, had already been published in the society's Journal. Professor Bartow stated that on most railroad trains the drinking water is sterilized with steam and considerable confidence could be placed in its safety. Other papers discussed in this section were the "Nitrogen Content of Water," by William M. Booth; "Arsenic in Filter Alum," by Edward Bartow; "Present Status of Disinfection of Water Supplies," by Francis F. Longley; "Some Considerations in Estimating the Sanitary Safety of Water Supplies," by W. H. Frost; "The Effect of Algae on Bicarbonates in Shallow Reservoirs," by S. T. Powell.

On Friday morning papers were presented by James M. Caird, entitled "Air-Bound Filters"; by Nicholas S. Hill, Jr., entitled "Pipe Distribution Systems," and by William W. Brush, "Maintenance of the Water Supply Distribution System of New York City," which had previously been printed in the Journal of the society. A paper by Edgar B. Kay, entitled "Impounded Water of Alabama in Relation to Public Health," also was presented. Following these papers the convention adjourned to meet in New York in 1916.

#### Pan-American Road Congress.

At the meeting of the executive committee of the Pan-American Road Congress, which was held in New York May 10, the proposition of the authorities of the Panama Pacific International Exposition to designate September 15 as Pan-American Road Congress Day was accepted. Progress reports of the sub-committees were presented.

Among the men who are prominently identified with the good roads movement who will be asked to preside over the sessions of the Pan-American Road Congress, which will open on September 13, are Governor Charles W. Gates of Vermont; Logan Waller Page, director U. S. Office of Public Roads; Col. Wm. D. Sohler, chairman, Massachusetts Highway Commission; George W. Tillson, consulting engineer to the president of the borough of Brooklyn, N. Y.; Fairfax Harrison, president, Southern Railway Co.; James H. MacDonald, former state highway commissioner of Connecticut, and W. A. McLean, chief engineer of highways and commissioner of Ontario Public Roads and Highways Commission.

Among other prominent men also identified with highway improvement who will be asked to present papers or open discussions are the following: Arthur W. Dean, chief engineer of Massachusetts Highway Commission; Charles J. Bennett, Connecticut state



highway commissioner; Nelson P. Lewis, chief engineer, board of estimate and apportionment of New York City; H. Elting Breed, first deputy commissioner, New York State Highway Commission; Col. Edwin A. Stevens, state commissioner of public roads of New Jersey; Wm. D. Uhler, chief engineer, Pennsylvania State Highway Department; Wm. H. Connell, chief, Bureau of Highways and Street Cleaning of Philadelphia; S. E. Bradt, secretary, Illinois State Highway Commission; Thomas H. McDonald, Iowa state highway engineer; W. E. Atkinson, Louisiana state highway engineer; Richard Henry Dana, president National Civil Service Reform League; W. S. Keller, Alabama state highway engineer; Austin B. Fletcher, California state highway engineer; W. R. Roy, secretary, Washington State Highway Board; Frank F. Rogers, Michigan state highway commissioner; Dr. Joseph Hyde Pratt, secretary, North Carolina State Highway Commission; A. N. Johnson, road engineer, Bureau of Municipal Research of New York City; Geo. W. Cooley, state highway engineer of Minnesota; E. R. Morgan, state road engineer of Utah; J. E. Maloney, secretary-engineer Colorado State Highway Commission; W. S. Gearhart, state engineer of Kansas; H. R. Carter, state highway engineer of Arkansas, and Lamar Cobb, state engineer of Arizona.

In addition to the presentation of topics covering practical problems connected with highway improvement, there will also be discussed such important subjects as "Determination of Justifiable Outlay for Individual Roads"; "Convict Labor for Road Work"; "Street Pavements"; "Reconstruction of Old Surfacing"; "Load and Tire Restrictions and Regulations"; "Motor Traffic, Its Development and Trend"; "Maintenance, Methods and Materials"; "Dust Suppression and Street Cleaning"; "Uniformity in Highway Statistics and Data"; "Merit System in Highway Work"; "Essentials of Legislation Governing State Highways"; "Highway Indebtedness, Limitation and Regulation"; and "Educational Work of Highway Departments".

#### State Conference of Charities and Corrections.

The fifth annual State Conference of Charities and Correction was held at Stamford, Conn., April 19 and 20. Norwich was selected as the next place of meeting and the following officers were elected:

President, Leonard O. Smith, Norwich; vice-presidents, Frederick G. Platt, New Britain; Dr. E. T. Bradstreet, Meriden; Geo. S. Palmer, New London; Geo. H. Edwards, Bridgeport; Edgar M. Warner, Putnam; Henry H. Bridgman, Norfolk; E. Kent Hubbard, Jr., Middletown; Wm. H. Hall, South Wilington; treasurer, Henry D. Johnson, Norwich; secretary, Edward D. B. Lynde, New London; executive committee, the above officers and Mrs. Geo. D. Coit, Mrs. Frank A. Mitchell, Rev.

John Broderick, H. M. Pollock, M.D., and Henry A. Tirrell, of Norwich; Mrs. Robert Chappell and Ernest E. Rogers, of New London; Judge L. W. Marvin, Hartford; Prof. Wm. B. Bailey and Frederick J. Kingsbury, of New Haven; H. H. Spooner, Kensington; Thomas L. Reilly, Rev. John Neale and David Gibbs, of Meriden; Chas. F. Kellogg, Waterbury; Rev. J. MacL. Richardson, Bridgeport; Miss Louise H. Merritt and Mrs. Frank M. Wright, of Stamford; Stephen B. Treadwell, Danbury; Seymour S. Green, New Milford.

Among the speakers were Dr. Dwight M. Lewis, city bacteriologist of New Haven, who spoke on "Adequate Control of Milk Supply," and Dr. Henry F. Stoll, of Hartford, whose subject was "Open Air Schools." Dr. Lewis's paper was discussed by Frank H. Stadmueller, of Hartford, state dairy and food commissioner; Christopher Eaton, of Greenwich, field secretary of the Connecticut Research Association; Miss Henrietta F. Thatcher, New Haven, president of the Infant Welfare Association.

Dr. Stoll's speech was followed with discussion led by Dr. H. Merriman Steele, New Haven; Dr. John E. Farrell, associate secretary, Waterbury Anti-Tuberculosis League, and F. S. Camp, principal of Rogers School, Stamford.

#### Evansville Road School.

The First District Road School held at Evansville under the auspices of Purdue University was held April 29-30. The program of the first forenoon consisted of an automobile tour over fifty miles of typical roads in Vanderburg County. This trip gave the road officials and farmers an opportunity to study brick, concrete, stone, gravel and dirt roads.

The afternoon meeting was held in the auditorium of the Evansville high school. The opening talk was made by Prof. R. L. Sackett, of the School of Civil Engineering of Purdue University on "Modern Road Surfaces." He considered the kind of traffic which was carried by the roads some time ago, contrasted with what they must carry now. Each of the various types of road surface was described and the advantages and disadvantages discussed.

The subject of "Maintenance of Earth and Gravel Roads" was then taken up by Prof. G. E. Martin, of the Highway Department of Purdue. Prof. Martin, in his talk, supplemented with demonstration materials, took up the fundamental operations necessary for proper maintenance of earth and gravel roads.

The second day opened with a talk on "Dust Prevention," by Prof. G. E. Martin, of Purdue. In this talk Prof. Martin considered the various sources of dust. It was shown that the dust can often be prevented at the source and no treatment of the highway is necessary. Various kinds of road surfaces give widely varying amounts of dust under the action of traffic.

Following this address was a talk

on "The Final Cost of the Road," by J. H. Dodge, of the U. S. Department of Agriculture.

The last subject was "The Maintenance of Macadam Roads," by Prof. Martin of Purdue. He first emphasized the importance of beginning the maintenance of macadam roads as soon as they were finished. If a road is allowed to rut up it is a very difficult matter to get it back into shape.

#### Texas State Firemen's Association.

The fortieth annual convention of the Texas Firemen's Association was held at Waco, Texas, May 4-6. New Braunfels was selected as the place for the next meeting and the following officers were elected: President, H. J. Braunig, Hallettsville; first vice president, Tom S. Wright, Temple; second vice president, Roger Byrne, Smithville, and third vice president, W. D. McCulley, Brownwood. These were re-elected by acclamation: Recording secretary, J. Ed. Schmitz, Dallas; treasurer, J. L. Storey, Houston; assistant recording secretary, W. L. Talbot, San Marcos; corresponding secretary, W. P. Walker, Luling; chaplain, the Rev. P. A. Heckman, Temple; mother of the state association, "Mother" J. J. Clinton, Abilene; G. J. Kempen, fourth vice president.

#### Iowa Section, National Electric Light Association and Iowa Electrical Contractors' Association.

The officers elected at the annual meeting of the Iowa Section of the National Electric Light Association, which closed at Keokuk, April 23, were: President, E. M. Walker, of Dubuque; vice-president, Thos. Farris, of Osage; secretary-treasurer, W. H. Thompson, of Des Moines; directors: Austin Burt, of Waterloo; C. W. Kellogg, of Keokuk, and H. A. Blackwell, of Davenport.

Officers were elected as follows by the Iowa Electrical Contractors, who held their convention at the same time and place: Floyd A. Wallace, of Des Moines, president; W. L. Fowler, of Cedar Rapids, vice-president; Mark T. Humphrey, of Waterloo, secretary-treasurer; and directors: Edward Kunkle, of Keokuk; George O. May, of Sioux City, and F. B. Sabin, of Des Moines.

#### Iowa Street and Interurban Railway Association.

The twelfth annual convention of the Iowa Street and Interurban Railway Association was held at Keokuk, April 22-23. The convention was unquestionably the most successful held in the history of the organization, according to officers and prominent members.

The final meeting closed with a session by the board of directors, when the following officers were elected for the coming year: R. A. Leussler, Omaha, re-elected president; J. F. Porter, Davenport, vice-president; H. E. Weeks, Davenport, re-elected secretary-treasurer. One director was elected at the meeting, J. L. Farley, of Ottumwa.

# NEW APPLIANCES

Describing New Machinery, Apparatus, Materials and Methods and Recent Interesting Installations.

## THE PARMLEY SYSTEM

### Of Reinforced Concrete Arch Construction.

The Parmley system of arch construction has for its main feature the position which the reinforcing steel occupies in the completed arch, sewer, conduit or pipe. There are three different types of structure: monolithic reinforced concrete arches where the concrete is deposited in mass in the final position in the finished structure; segmental pipes which are built up from manufactured units or segments of the pipe ring and unit pipes which are made in unit lengths of several feet, usually four or eight.

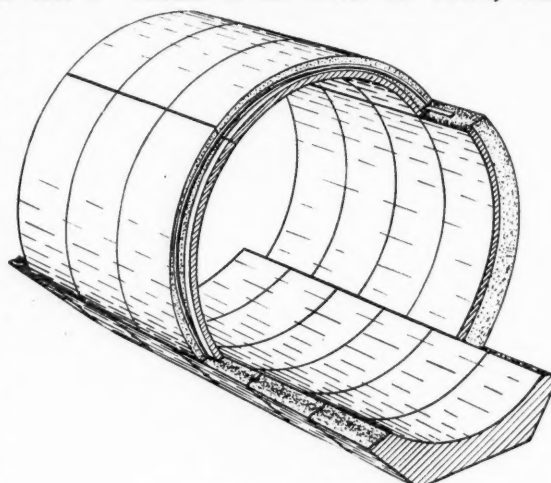
It is claimed that in this system the steel is used nearly twice as effectively as is customary by the usual methods of reinforcement. This is due to the fact that arch bars pass through from the extrados to the intrados at the crown or top of the arch. Where the arch naturally tends to settle under the load and so stretch the bars, the tendency of the sides is to move outward and for the top to move downward or inward. These two tendencies are opposed to each other, and, therefore, for a given settlement, cause nearly double the change in length of the bar which resists this movement than would be the case if the bar continued on either side of the arch only. In tests made on similar arches of 14 feet 9 inches span using different methods of reinforcing, it is claimed to have been found that with the ordinary concentric system the arch collapsed at 14.5 tons per lineal foot, 10, 20 and 30 degree loading points, while the Parmley arch held 14.3 tons per lineal foot similarly loaded. The Parmley arch, however, used only one-half the amount of steel. Anchor bars may be used very easily and effectively.

The monolithic system was the first type of this system used and was the method of the big Cleveland intercept-

ing sewer jobs in 1902, which cost over \$1,500,000. At one point the sewer is supported on three 30-foot arches and in turn carries a 60-foot-wide boulevard; at other points, and for considerable distances, the sewer, 13 feet 6 inches in diameter, is deeply embedded, the depth ranging from 30 to 45 feet, with main tracks of the L. S. & M. S. Ry. almost directly overhead. The same type is used on other structures such as docks, consisting of arches carried on reinforced concrete piling.

The segmental pipe construction is particularly effective for medium sizes, and for tunnels of any diameter. Mass concrete deposited in place, with proper ramming, is satisfactory for heavy walls. In thin walls, however, defects are much more dangerous and these are obviated in segmental construction since the segments are manufactured under factory conditions where the highest grade of product can be produced. The sewer barrel is divided transversely into sections 1 foot long and these in turn into such number of pieces as to bring the weight of each down to one-man stones. These are manufactured as units and then set in mortar, together with a reinforcing skeleton, so as to produce results equal to first class stone masonry. The segments are made in suitable plants near the site of the sewer. The molds are usually cast iron and the concrete is rammed into place with rammers of about 10 pounds weight. The moulds are removed and

the segments left on the pallets for twenty-four hours. All types of sewers, including egg-shaped, may be built up. The segments are also often made in gang molds of wet concrete, which remain in the molds for twenty-four



SEGMENT CONSTRUCTION.

hours to harden before removal. The unit pipes are usually made in four and eight foot lengths, the former generally for sewer and water pipes. In all pipes the reinforcement is in the line of principal tension and the tension is thrown into the steel at top, bottom and sides. Bell and spigot pipe is made so that an annular space closed both on the inside and outside of the pipe, will be left for grouting, giving joints that will be tight under pressure.

The accompanying illustrations show the three types: a sectional view of the pipe, a four-segment sewer and spiral and longitudinal reinforcing for unit pipe. The system is that of Walter



CROSS SECTION SHOWING METHOD OF REINFORCING.



REINFORCING FOR UNIT CONSTRUCTION.



C. Parmley, Inc., 45 East 17th street, New York City.

### THE "ELDUS."

#### Hot Asphalt and Oil Distributor.

The common practice of hand pouring of asphalt from ordinary buckets has many disadvantages, owing to the uneven distribution of material, due to more being deposited at the beginning of the stroke than in the middle. In pouring a "squeegee" coat the road very often has a wavy appearance. Good co-ordination of the "pourers" with the men who carry the material to them is seldom possible, and this causes the need of extra labor and losses due to cooling of asphalt or oil. These disadvantages are claimed to have been overcome in the "Eldus" distributor. It is calculated that as each man does his own pouring in the "Eldus" method, expert pourers are not needed and five men form an asphalt gang instead of the customary eight. Four "Eldus" distributors are used and an extra man is located at the kettle for loading the machines as they back up to the heating tank.

The "Eldus" holds 33 gallons when full. It is fitted with a heavy iron wire mesh screen, insuring against foreign matter entering the distributor, which may be easily removed for cleaning purposes. In operating, when the desired quantity is in the distributor the cover at the rear end is dropped into place. When the man reaches his starting point, he grasps the lower handles, which are moveable and control the distribution, and walks the required distance. In this way proper distribution is made, according to the correct predetermined quantity per square yard. The width of each pour

is 2 feet, and the traction is inside the distribution, so that another pour may be very easily and accurately placed alongside of it. The same gang can be used in refilling the tank, spreading screenings on the asphalt, and trimming up—so that labor is always busy. As the machine has 30 by 3-inch wheels, it is an easy pull for a man, and the work can be done by very cheap labor.

A distributor of 50 gallons capacity is also made, which is provided with a heating attachment. This is well adapted for use by road patrolmen for maintenance work where no other means have been provided for keeping the material at the desired temperature. The accompanying illustration shows one of these distributors. They are made under Schoentag and Latus patents by the Union Iron Works, Hoboken, N. J.

## INDUSTRIAL NEWS

**Cast Iron Pipe.**—Chicago—The leading interest was successful bidder for 400 tons of high pressure pipe at Detroit and was awarded two contracts at Cincinnati totaling 3,400 tons. New business is slow. Quotations: 4-inch, \$25.50; 6 to 12-inch, \$23.50; 16-inch and up, \$23. Birmingham—Demand is very good; plants are active, and outlook satisfactory. The principal order of the week was one for 3,000 tons of gas pipe for the Birmingham Railway, Light & Power Co., secured by the Bessemer plant of the leading interest. Far western business is also reported. Quotations: 4-inch, \$20; 6-inch and up, \$18. New York—Pipe for Newark, N. J., bids on which were opened May 6, was awarded partly to the U. S. Cast

Iron Pipe & Foundry Co. and partly to the Standard Cast Iron Pipe & Foundry Co., except the high pressure pipe contract, which was given to R. D. Wood & Co. The Department of Water Supply, Gas and Electricity of New York City is opening bids on a contractors' pipe-laying job for Manhattan, involving the purchase of about 700 tons, in sizes ranging from 6 to 48-inch. Quotations: Class B and heavier, \$22 to \$22.50 for 6-inch; Class A, \$23 to \$23.50.

**Lead.**—Quotations: New York, \$4.20; St. Louis, \$4.10.

**The Bessemer Limestone Co.,** has been awarded a large contract for supplying the brick for the 6-mile highway near the new Ashokan reservoir near Kingston, N. Y.

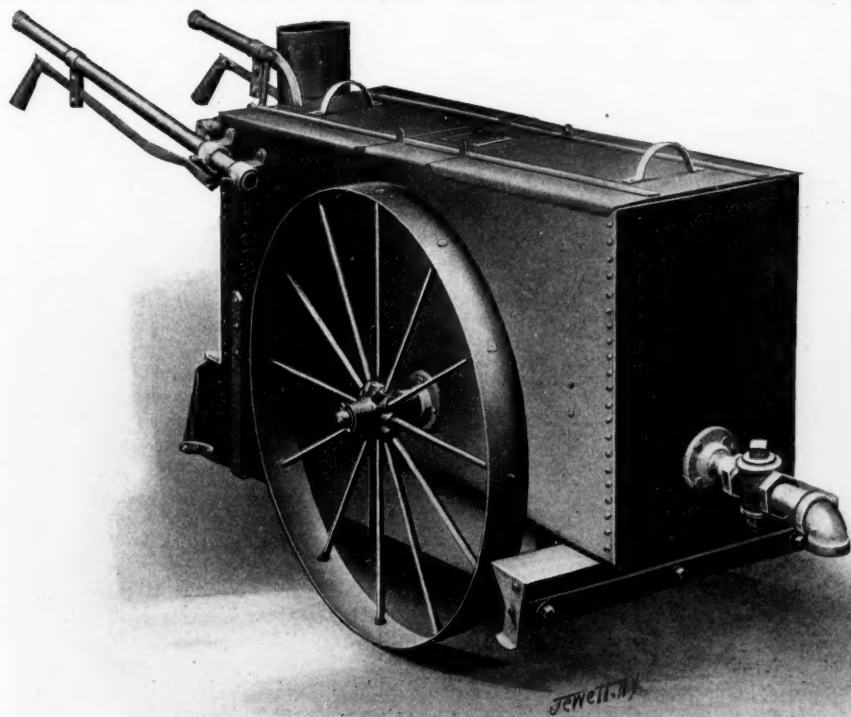
**The Pitometer Co.,** 25 Elm street, New York City, specializing in water measurement and waste surveys, announces the removal of its office from 220 Broadway to larger quarters at the new address given. The shop formerly located at 1 West Broadway has also been removed to the new address.

**August Mietz,** manufacturer of Mietz & Weiss oil engines, 128-138 Mott street, and 87-89 Elizabeth street, New York, N. Y., has sold to the town of Schleswig, Ia., one 50-hp. and one 75-hp. engine, to operate an alternator in the local electric lighting plant.

**The Russell Grader Mfg. Co.,** 2207-2229 University avenue, S. E., Minneapolis, Minn., has just sold a new "Mogul" traction engine to the city of Belfast, Me., for work on roads.

**The Associated Advertising Clubs of the World** will hold their eleventh annual convention in Chicago, June 20 to 24. This great gathering to discuss common problems and advance the cause of truth in advertising promises to be unique in the events of the year. President Wilson, war conditions permitting, will head the list of speakers. Hon. William Jennings Bryan, John H. Fahey, president of the Chamber of Commerce of the United States; Henry Watterson, George Horace Lorimer, editor of the Saturday Evening Post, and Arthur Brisbane are among others of national prominence who are to address the sessions. On the Sunday preceding the formal opening of the convention, fifty business men of country-wide reputation will deliver lay sermons in Chicago churches. New features include a conference of the teachers of advertising and another of the secretaries of advertising clubs. Departmental meetings of men in the several fields of work give opportunity

for a discussion of the problems of various phases of advertising. Amusements include a list of social functions for the ladies, a Gridiron show to be staged by one hundred and fifty Chicago men; lake and automobile trips. At present a whirlwind campaign is being waged by advertising clubs in an effort to gather in Chicago in force.



THE "ELDUS," HOT ASPHALT AND OIL DISTRIBUTOR.

**The Cement Products Exhibition Co.**, 208 South LaSalle street, Chicago, Ill., at its annual meeting, elected the following officers: B. F. Affleck, president; A. Y. Gowen, vice-president; Robt. F. Hall, secretary; J. U. C. McDaniel, treasurer. The directors elected were the following: B. F. Affleck, J. B. Beck, W. E. Cobean, Wm. Dickinson, A. Y. Gowen, Edward M. Hagar, Robt. F. Hall, D. McCool, J. U. C. McDaniel.

**The Kissel Motor Car Company**, 570 Kissel avenue, Hartford, Wis., announces that it now has municipal service trucks in upwards of fifty cities. These include motor-driven fire apparatus, street sprinklers and flushers, police patrols, ambulances, water department fleets, waste pick-ups and dump wagons. Recent sales of Kissel-Kar trucks have been made to the cities of Council Bluffs, Ia.; Duluth, Minn.; Butte, Mont.; Vallejo and Riverside, Cal.; Alliance, Neb., and Sheboygan, Wis.

#### TRADE LITERATURE.

**The Koehring Machine Co.**, Milwaukee, Wis., is issuing a new catalogue for concrete contractors, which contains much information of value outside of descriptions of Koehring mixers. It is an unusual large sized book of 98 pages, with cover printed in four colors, and inside pages in three colors. It illustrates and describes the entire Koehring line of mixers: Side loaders of 4, 7, 10, 12, 15, 20, 24, 30 and 44 cu. ft. capacity; pavers of 6, 11, 18, and 22 cu. ft. capacity, and hot mixers of 10, 18 and 20 cu. ft. capacity. There are numerous photographs showing Koehring mixers "on the job." These photographs are large sized and show good detail of the contract. They offer an opportunity to study crew-handling, the placing of mixers, materials, etc., with a view of minimizing labor costs, and securing the greatest possible efficiency.

The catalogue, of course, contains detail description of the Koehring mixer—construction; special automatic features, including the Koehring batch-

meter; new feature of side loaders, which permits discharge to be controlled from four positions, two on either side of the mixer; increased leverage of discharge lever, securing easier operation. It also shows new automatic knockout and brake on loading skip by which the skip automatically stops at charging position, and stays there until released. Another improvement is the power-driven platform-controlled distributing spout, by which the spout is lengthened or shortened, or swung to any position by the operator on the control platform, with the same flexibility as the boom and bucket system. The spout maintains a uniform distance from the ground at every point of delivery. While the Koehring mixer, as described in the new catalog remains standard in principal features, many improvements and refinements in detail have been made which add materially to smoothness of operation and low-maintenance.

**The Link-Belt Company**, Chicago, Ill., have issued a new catalogue, No. 210, of their portable wagon loaders. These efficiency machines are being widely used for handling coal, sand, stone, gravel and all sorts of similar loose materials. The catalogue describes all the various types of loaders, and in profuse illustrations shows them in action. The accompanying cut shows a standard type "D" loader handling stone and gravel. The new booklet should serve as a good introduction to these well-known "ton-a-minute" machines.

**The Barber Asphalt Paving Co.**, Philadelphia, Pa., is issuing for general distribution a new pamphlet, "Trinidad and Bermudez Lake Asphalts and Their Use in Highway Construction," by Clifford Richardson. The booklet gives the exceedingly interesting story of the so-called Trinidad Pitch Lake in the island of Trinidad, and the Bermudez Pitch Lake in Venezuela; it describes these wonderful lakes of asphalt, the methods of mining the material, the character and composition of the bitumen and oils and

their treatment. The methods of use in such roads as Vermont avenue, Washington, D. C., Fifth avenue, New York City, and on the Victoria embankment, London, are shown as illustrations of the valuable qualities of these asphalts as road materials. The illustrations in the pamphlet show vividly all the phases of the story from lake to road. All interested in asphalt and its uses will find some very fine reading in this book of "The Lakes of Good Roads."

#### PERSONALS

The following officers have been elected:

New Brunswick, N. J.—Department of public affairs—Mayor Edward F. Farrington; department of revenue and finance—John J. Morrison; department of public safety—Edward J. Houghton; department of streets and public improvements—Charles A. Oliver; department of parks and public property—James Merston.

Harvard, Neb.—Geo. H. Thomas re-elected mayor; H. G. Wellensick, treasurer; L. A. Higgins, clerk; C. H. Worley, engineer; H. R. Tillotson and J. W. Turner, councilmen.

Greeley, Colo.—H. H. Harbaugh, mayor, re-elected; W. A. Hotchkiss, clerk, re-elected; B. E. Woodruff, J. B. Phillips (re-elected), J. J. Meller (re-elected), T. T. Wilson, E. F. Cottingham and L. C. Baab, councilmen.

Miles City, Mont.—Mayor, C. H. Mott; treasurer, R. H. Daniels; magistrate, John Gibb; alderman first ward, Mel. W. Paddock; second ward, H. V. Bailey; third ward, Frank Sowerby.

Hardin, Mont.—A. L. Mitchell, mayor.

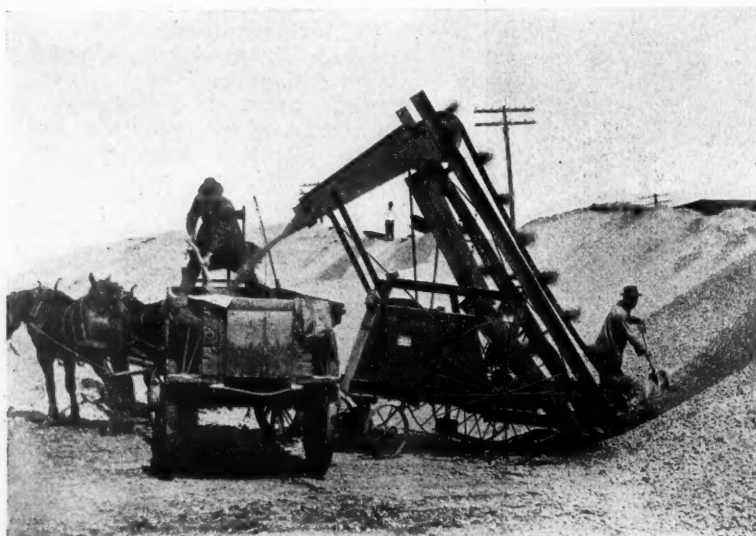
Alachua, Fla.—W. T. Roberts, mayor; M. E. Marcionny, clerk and treasurer; aldermen, E. Stringfellow, E. C. Pearson, F. M. Stephens and I. S. Futch.

Johnstown, Colo.—Wm. Perkins, mayor; J. K. Barnard, trustee.

Platteville, Colo.—L. S. Birkle, mayor; J. C. Otteson, trustee.

Fremont, Neb.—Geo. Murrell, mayor; city attorney, C. E. Abbott; chief of police, Otto Peterson; street commissioner, W. A. Graham; city physician S. A. Preston; city engineer, L. M. Roessler; board of public works for three years—Frank Hammond. The following committees were named: Ordinance—Claire Harrington, Soren Nelsen, Henry Carroll; streets and sidewalks—L. J. Larsen, Henry S. Carroll, Soren Nelsen, Fred G. Pearce; finance—P. H. Larson, Henry Carroll, Simon Koeberlin; public parks—Henry Carroll, P. H. Larson, Henry Jess; gas and light—Fred G. Pierce, Simon Koeberlin, Henry Jess, Soren Nelsen; public buildings—Soren Nelsen, Simon Koeberlin, L. J. Larsen; sewerage—Simon Koeberlin, Henry Jess, Fred G. Pierce; fire and water—Henry Jess, L. J. Larsen, Claire Harrington, P. H. Larson.

Chattanooga, Tenn.—J. M. Littleton, mayor; city attorney, Frank Carden; treasurer, J. M. Payne.



LINK-BELT LOADER HANDLING STONE AND GRAVEL.



# ADVANCE CONTRACT NEWS

## ADVANCED INFORMATION BIDS ASKED FOR

## CONTRACTS AWARDED ITEMIZED PRICES

To be of value this matter must be printed in the number immediately following its receipt, which makes it impossible for us to verify it all. Our sources of information are believed to be reliable, but we cannot guarantee the correctness of all items. Parties in charge of proposed work are requested to send us information concerning it as early as possible; also correction of any errors discovered.

### BIDS ASKED FOR

STATE	CITY	REC'D UNTIL	NATURE OF WORK	ADDRESS INQUIRIES TO
<b>STREET AND ROADS</b>				
Minn.	Chatfield	2 p.m., May 22	Grading state road	J. T. Davis, Ch. Bd. Supvrs.
Ind.	New Albany	10 a.m., May 22	Grading, paving and improving	J. T. Miller, Floyd Co. Aud.
Wis.	Lake Geneva	4 p.m., May 22	Grading and paving streets	Board of Public Works
Ala.	Huntsville	May 22	Macadamized road	County Commissioners
Minn.	Badger	2 p.m., May 22	Grading and improving roads	Town Supervisors
Minn.	Hibbing	1 p.m., May 22	Road construction	V. J. Benoe, Town Clerk
S. D.	Huron	1 p.m., May 24	Cement sidewalks and curb	V. G. Medbery, Mayor
Wyo.	Cokeville	8.30 p.m., May 24	Concrete walk, gutters and street crossings	L. A. Woodward, Town Clk.
N. C.	Wilmington	Noon, May 24	Sixteen miles sand clay road	W. H. Banck, Engr.
Minn.	St. Paul	10.30 a.m., May 24	Paving on various streets requiring cement, sand, crushed stone, creosoted blocks, sandstone blocks, pitch filler, sandstone curb and sewer pipe materials	A. Hohenstein, Pur. Agt.
O.	Swanton	May 24	Street pavement	W. B. Elwell, Vil. Clk.
Tex.	Kountze	May 24	Grading and constructing road	Co. Comrs.
O.	Portsmouth	May 24	15,313 ft. road construction	T. C. Patterson, Co. Aud.
Mass.	Boston	Noon, May 24	Laying asphalt and bitulithic	Patrick O'Hearn, Act. Comr. Public Works
Ky.	Winchester	2 p.m., May 24	One to three miles, turnpike road	G. T. Rowland, Dodge
O.	Barnesville	Noon, May 24	Grading and paving streets	F. W. Hilles, Vil. Clk.
O.	Cleveland	Noon, May 24	Constructing sidewalk	J. A. Fitzgerald, E. 71st St.
Ind.	Kokomo	10 a.m., May 24	Roadway improvement, combined cement curb and gutter and cement sidewalks	Board of Public Works
Wash.	Montesano	2 p.m., May 24	Clearing, grubbing, grading, etc., on highway	D. W. Campbell, Co. Aud.
Ind.	Richmond	10 a.m., May 24	Cement sidewalks	Board of Public Works
N. Y.	New York	2 p.m., May 24	Repaving with sheet asphalt on concrete foundation, also granite block on concrete foundation and concrete sidewalks and flagging	Marcus M. Marks, Boro. Pres., Manhattan
O.	Geneva	Noon, May 24	Brick paving	M. C. Goddard, Vil. Engr.
Wash.	Olympia	May 24	Grading, draining and bridging state highway	W. R. Roy, State Hwy. Comm.
Cal.	Sacramento	May 24	Highway improvements	State Highway Commission
Wash.	Seattle	May 24	Road construction	Board of County Comrs.
Wis.	Edgerton	Noon, May 24	Grading and paving streets	Street Assessment Committee
Ala.	Evergreen	May 24	Building sand clay road	County Commissioners
Neb.	University Place	May 24	Asphaltic concrete paving	C. C. Bates
Minn.	Marble	8 p.m., May 24	Concrete sidewalks, curbs and gutters	R. S. Curran, Vil. Clerk
Cal.	Sacramento	2 p.m., May 24	State highways in four counties	A. B. Fletcher, Highway Eng.
O.	Niles	May 25	Paving	City Clerk
Ala.	Tuscaloosa	May 25	12 miles bituminous road to cost about \$17,000	W. H. Hayes
O.	Attica	May 25	Improving about 6 miles of road	J. W. Price, C. E.
Mich.	Bay City	Noon, May 25	Grading 16 miles road	D. W. Hunter, Cq. Clk, Gladwin
N. C.	Marshall	May 25	Grading and draining roads	A. B. Clingham, Madison Co. Rd. Engr.
O.	Painesville	May 25	Brick on concrete base	Martin A. Luther, Dir of Serv.
Wash.	Seattle	May 25	Road construction	Board of County Comrs.
Pa.	Derby	8 p.m., May 25	Resurfacing and bituminous treatment	A. Damon, Jr., Boro. Engr.
N. Y.	New York	10.30 a.m., May 25	200,000 gals. asphalt road oil, 1,500 cu. ft. ashes, 225,000 gals. coal tar road oil, 225,000 gals. of tar road oil, repairing asphalt block pavements	D. Mathewson, Pres. Bronx City Engineer
Mass.	Beverly	7 p.m., May 25	10,500 sq. yds. Hassam block pavement	City Civil Engr.
O.	Youngstown	Noon, May 25	Paving	Peter C. Given, Dir. Pub. Ser.
O.	Wooster	Noon, May 25	Grading and paving with brick	L. Siebert, Jr., City Clerk
Ind.	Tell City	7 p.m., May 25	Concrete sidewalk, curb and gutters	City Engineer
Mich.	Flint	3 p.m., May 26	Paving	City Clerk
Me.	South Portland	10 a.m., May 26	Cement sidewalks	W. W. Marr, Chief State Hwy. Engr.
Ill.	Springfield	May 26	1,920 ft. macadam and 9,000 ft. of concrete	Wm. H. Connell, Chf. Bur. Sts. City Clerk
Pa.	Philadelphia	May 26	Street grading and paving to cost \$500,000	G. C. Wartmann, Sec. Board Cont. & Supply
Me.	So. Portland	10 a.m., May 26	Constructing cement sidewalks	F. C. Highley, Co. Surveyor
N. Y.	Schenectady	2.30 p.m., May 26	Paving 23,000 yds. with asphalt	A. R. Callow, Comr. P. & S. State Board Public Road
O.	Delaware	10 a.m., May 26	Grading, draining and macadamizing	C. E. Close, Clerk
O.	Cleveland	Noon, May 26	Grading, curbing and improving streets	Board Public Works
R. I.	Providence	Noon, May 26	Reconstructing 4,765 ft. road	Board Public Works
N. J.	Freehold	11 a.m., May 27	Constructing road	County Comrs.
Ind.	Richmond	10 a.m., May 27	Constructing concrete street	O. C. Higgins, Co. Aud.
Ky.	Louisville	2 p.m., May 27	Paving three streets with brick	J. E. Chase, Clk. Co. Court
O.	Akron	May 28	Road to cost \$88,000	County Engineer
O.	Mt. Gilead	May 28	Macadamizing	S. P. Nelsen, DeKalb Co. Aud.
W. Va.	Moundsville	May 28	Grading and macadamizing	City Clerk
N. J.	Hackensack	1 p.m., May 28	Road improvements	H. A. Stevens, City Engr.
Ind.	Auburn	10 a.m., May 28	Highway improvements	F. M. Williams, Co. Aud.
Del.	Wilmington	4 p.m., May 28	Granite and concrete curbs, gutters; 100,000 yds. street improvements	P. P. Kukowski, Clerk
Tex.	Corpus Christi	4 p.m., May 28	Curbing, grading and paving about 86,000 sq. yds.	Geo. Riechers, City Clk.
Ind.	Muncie	1.30 p.m., May 29	Grading and macadamizing road	Delaware Co. Comrs.
Minn.	Leo	2 p.m., May 29	Constructing six miles of road	Grand Jury, Q. S. Court
Neb.	Falls City	May 29	Paving, curbing and guttering, cost about \$50,000	Town Clerk
Ind.	Indianapolis	1.30 p.m., May 29	Grading, gravelling or macadamizing	W. S. Keller, St. Hwy. Engr., Montgomery
Pa.	Pittsburgh	May 29	About 13 miles road construction to cost \$446,000	County Commissioners
Minn.	Roseau	10 a.m., May 29	3 1/2 miles grading	City Engineer
Ala.	Selma	May 31	Grading, draining and gravel surfacing	
Ala.	Hayneville	May 31	Grading, draining and surfacing with gravel	
Utah	Ogden	10 a.m., May 31	Street improvements	

## BIDS ASKED FOR

STATE	CITY	REC'D UNTIL	NATURE OF WORK	ADDRESS INQUIRIES TO
Ind.	Kokomo	May 31	Cement sidewalks	Board of Public Works.
Fla.	Lake City	May 31	Street paving to cost \$20,000	A. F. Miller, Engineer
Tex.	Clarksville	May 31	7,230 yds. asphalt macadam, 13,531 yds. brick, 1,897 yds. concrete, 7,058 ft. curb and gutter, 8,410 ft. concrete curb	John Webb, City Clk.
N. Y.	Albany	1 p.m., June	1.. Repairing highways in 24 counties	Edwin Duffey, St. Hwy. Com.
N. J.	Harrison	June	1.. Bitulithic paving	City Clerk.
Wash.	Olympia	2 p.m., June	1.. Clearing, grading and draining about 9½ miles of road	Thurston Co. Engr.
La.	Lake Charles	June	1.. Grading and graveling two miles road	E. C. House, Clk. Pol. Jury
O.	Akron	11 a.m., June	1.. Grading, curbing and paving road	C. L. Bower, Clerk
Cal.	Sacramento	June	1.. 35.7 miles state highway	State Hwy. Comm.
Wash.	Olympia	June	1.. 15.5 miles Pacific Highway	State Hwy. Comm.
Mich.	Vandalia	Noon, June	1.. County roads	J. A. Shattuck, Ch. County Rd. Comrs.
Minn.	Argyle	10 a.m., June	1.. Road grading and improving	Chas. Wilen, Town Clerk.
N. D.	Grand Fork	10 a.m., June	1.. Making fill, and building culvert	Hans. Anderson, Co. Aud.
Wis.	Dodgeville	7 p.m., June	1.. Constructing concrete walks	J. P. Lewis, City Clerk.
O.	Struthers	June	2.. Brick paving	Village Clerk.
La.	Grinnell	2 p.m., June	3.. 83,350 yds. paving, 64,770 ft. curb and gutter, 11,300 yds. grading and 29,000 lbs. castings	A. C. Harriman, City Clk.
Ind.	Hartford City	7 p.m., June	4.. Street improvement	City Clerk.
O.	Columbus	Noon, June	4.. Road improvements	John Scott, Clk. Franklin Co. Comrs.
O.	Steubenville	June	4.. Road construction	J. L. Means, Jefferson Co. Aud.
N. Y.	Albany	1 p.m., June	4.. Constructing and repairing highways in 20 counties	Edwin Duffey, Commissioner
O.	Cleveland	Noon, June	7.. Grading and flagging streets	F. A. Pease Engr. Co.
Fla.	Tavares	June	7.. About 19 miles road construction	M. V. Simpson, Comr.
Ind.	Kentland	2 p.m., June	7.. Grading, paving and improving roads	S. R. Sizelove, Co. Aud.
Ind.	Jeffersonville	10 a.m., June	7.. Grading and macadamizing road	G. W. Stoner, Co. Aud.
Ind.	Franklin	2 p.m., June	7.. Grading, paving and improving road	H. L. Knox, Co. Aud.
O.	Arlington	June	7.. 6,000 yds. brick pavement; curbing	City Clk.
Ind.	Portland	10 a.m., June	7.. Grading, draining and paving with crushed stone	John Bonifas, Aud. Jay Co.
Wash.	Ellensburg	2 p.m., June	7.. Grading and graveling	M. M. Emerson, Co. Engr.
Tex.	McKinney	June	7.. Constructing about 215 miles gravel, macadam and concrete roads	John Mead, Co. Engr.
Miss.	Hazelhurst	June	7.. About \$50,000 worth gravel roads construction	X. A. Kramer, Engr., Magnolia
Wis.		2 p.m., June	7.. Excavating and filling cut	Arlington Hotel.
N. D.	Cooperstown	June	7.. Concrete walks for one year	G. B. Edmondson, City Aud.
Pa.	Kittanning	8 p.m., June	7.. 1,500 yds. street paving and curbing	H. J. Walker, Boro. Secy.
Cal.	San Jose	11 a.m., June	7.. Improving roads	Harry Pfister, Clk. Supvsrs.
N. D.	Mohall	2 p.m., June	8.. Road grading	Peter Carlson, Co. Aud.
Ind.	Covington	2 p.m., June	8.. Grading, paving and improving	H. W. Newlin, Fountain Co. Auditor.
Ind.	Kokomo	10 a.m., June	8.. Highway improvements	E. B. Swift, Howard Co. Aud.
Wash.	Mt. Vernon	2 p.m., June	8.. Grading 2½ miles	A. L. Strong, Co. Engr.
Ind.	Noblesville	June	8.. 3 miles concrete boulevard to cost \$53,000	Hamilton Co. Comrs.
Ind.	Knox	June	8.. Grading, paving and improving roads	C. W. Weninger, Co. Aud.
La.	Mason City	2 p.m., June	8.. About 18,000 yds. grading	G. E. Frost, Co. Aud.
Ind.	Crawfordsville	10 a.m., June	8.. Grading, draining and paving roads	E. E. Engle, Co. Aud.
Ind.	Shelbyville	June	9.. Grading and graveling road	F. W. Fagel, Co. Aud.
O.	Struthers	Noon, June	9.. Brick pavements on two streets	Jonah Richards, Vil. Clk.
Kan.	Hutchinson	Noon, June	10.. Road improvements	County Engineer.
O.	Cincinnati	Noon, June	11.. Grading and improving roads	Albert Reinhardt, Clk. Comrs.
La.	Baton Rouge	June 20	170,000 sq. yds. pavement and curb and gutter	John J. Munding, City Engr.
SEWERAGE				
Wis.	Racine	10 a.m., May 22	Sewer work, including 3,522 ft. 66-in. brick, 1,788 ft. 60-in. brick, 587 ft. 54-in. brick, 1,353 ft. 36-in. brick, 624 ft. 30-in. brick, 327 ft. 27-in. brick and 323 ft. 18-in. pipe sewers, 26 manholes, 33 catch basins and 155-ft. concrete outfall	P. H. Connolly, City Engr.
O.	Cleveland	May 23	Constructing c.-l. pipe drains	A. R. Callow, Comr. Pur. & S.
Pa.	Ebensburg	6 p.m., May 24	Const. sew. disposal plant & about 5,000 ft. 15-in. terra cotta sewer	F. H. Barker, Pres. Council
N. Y.	New York	2 p.m., May 24	Sewer alteration and improvements	M. M. Marks, Boro. Pres. Manhattan.
Conn.	Greenwich	May 24	Sewage disposal works	S. E. Miner, Engr., Trust Co. bldg.
Pa.	North East	8 p.m., May 24	Sewage disposal plant, including Imhoff tank filtration beds and appurtenances. (Plans for inspection only)	C. C. Hill, Boro. Engr.
N. Y.	L. I. City	11 a.m., May 24	Sewer construction	M. E. Connolly, Boro. Pres.
N. Y.	Avon	May 24	Constructing 7,000 ft. sewer	W. H. Clark, Vil. Clk.
Minn.	St. Paul	10.30 a.m., May 24	Sewer construction	A. Hohenstein, Pur. Agt.
Mont.	Anaconda	May 24	Paving and storm drain system	M. K. Kelly, City Clk.
Minn.	Duluth	10 a.m., May 24	Furnishing materials for sewer construction	W. H. Borgen, City Clk.
Ill.	Peoria	2 p.m., May 24	Constructing system of sewers	S. W. Eckley, Pres. Bd. L. I.
N. D.	Fargo	10 a.m., May 25	Constructing 12-inch collateral sewer	A. R. Watkins, City Aud.
Cal.	Sacramento	10.30 a.m., May 25	About 6,500 ft. 24 to 60-inch sewer	M. J. Desmond, City Clk.
Ont.	Toronto	Noon, May 25	Storm overflow sewer	T. L. Church, Ch. Bd. Control.
La.	Tripoli	May 25	Sewer system and sewage disposal plant	M. Ischirgi & Sons, Engrs., Cedar Rapids.
Md.	Easton	May 25	Constructing sludge beds, sand filter beds, etc., and extending outfall sewer	J. B. Clark, City Clk.
Pa.	Wilkes-Barre	May 25	Constructing brick, segment block and terra cotta pipe sewers	Fred H. Gates, City Clk.
Ind.	Hartford City	2 p.m., May 25	Furnishing and laying 3,999 ft. of 18-in. tile; doing other drainage ditch work	F. P. Wallace, Co. Surveyor.
O.	Rittman	7 p.m., May 25	5.36 miles 6 to 15-in. vit. pipe, sewers and sewage treatment plant	W. F. Peters, Engr. Medina.
Ind.	South Bend	10 a.m., May 25	Sewers	Board of Public Works.
Md.	Easton	Noon, May 25	Pumps and equipment for sewage disposal works and sewer extensions	Kastenhuber & Anderson, Act. Town Engrs.
Mich.	Flint	3 p.m., May 26	Sanitary sewers	City Engineer.
N. Y.	Binghamton	4 p.m., May 26	Vitrified pipe sewer with manholes, flushing tanks, catch basins, etc.	E. W. Foster, City Clk.
N. Y.	New York	11 a.m., May 26	Superstructures of sewage pumping station, sanitary and storm outlet sewers	L. H. Pounds, Boro. President, Brooklyn.
N. Y.	Schenectady	2.30 p.m., May 26	Sanitary sewers in 6 streets, and surface water sewer	G. C. Wartmann, Secy. Bd. Contr. & Supplies.
Wis.	Green Bay	10 a.m., May 27	Constructing 12 to 42-inch sewers	L. Findeisen, Ch. Sewer Com.
Mich.	Davison	May 28	Construction of "Dumanois" drain	A. H. Reid, Co. Drain Comr.
Wis.	Ripon	4 p.m., May 31	Reconstructing bed on sewer farm	J. W. Pierce, City Clk.
Utah	Ogden	10 a.m., May 31	Pipe sewer, etc.	City Engr.
Tenn.	Clarksville	May 31	Constructing about 800 ft. 10 to 18-in. sewers	C. E. Terry, Mayor
Neb.	Plattsmouth	5 p.m., May 31	One block storm sewers	J. E. Nemetz, City Clk.
N. Y.	Newburgh	5 p.m., June 1	Sewer construction	D. J. Coutant, City Clk.
Wis.	West Allis	June 1	Vit. pipe storm sewer and 1,500 ft. 42-in. concrete segment block sewer	E. J. Obert, City Engr.
Mo.	Caruthersville	June 2	Constructing sewerage system	W. D. Byrd, Mayor.



## BIDS ASKED FOR

STATE	CITY	REC'D UNTIL	NATURE OF WORK	ADDRESS INQUIRIES TO
Pa., Downingtown	June	7..	Sewerage system and sewage disposal plant.....	Chas. McFadden, Sec.
O., Struthers	Noon, June	9..	Constructing storm water and sanitary sewers.....	Jonah Richards, Vil. Clk.
O., Springfield	4 p.m., June	11..	Sewage disposal at infirmary.....	Co. Aud. of Clark. Co.
WATER SUPPLY				
Wis., Kaukauna	2 p.m., May	22..	Laying water pipe and house drain.....	City Clerk
O., Middletown	Noon, May	22..	16-inch water mains.....	Don Kunz, City Com.
Ia., Oelwein	1 p.m., May	22..	Concrete water supply well.....	G. H. Bishop, City Engr.
Ia., Colo.	May	24..	13,000 ft. 4, 6 and 8-in. c. i. pipe, deep well pump and 50,000-gal. tank on 100-ft. tower.....	H. E. Ransom, Town Clk.
Neb., Ceresco	May	24..	Water works.....	City Clerk.
N. Y., Binghamton	May	24..	Stand pipes.....	Bd. of Contract & Supply.
Wash., Prescott	May	24..	Water works improvements, including 4,200 ft. 6-in. metal pipe, 6,209 ft. of 4-in. fittings, valves, etc.....	J. C. McSherry.
Kans., Garnett	May	25..	Waterworks system.....	F. S. Mitchell, City Clk.
Pa., Philadelphia	May	25..	17,000 ft. 48-in. pipe, 3,300 ft. 20-in. & 21,000 ft. 24-in. pipe.....	Bureau of Water.
Ind., Portland	9 a.m., May	25..	Drilling a well.....	Frank Hartup, Trustee
Ia., Onslow	8 p.m., May	25..	Water works plant.....	Harry H. Hall.
Cal., Mare Island	10 a.m., May	25..	Cast and wrought iron pipe and c. i. valves.....	Bur. of Supplies & Accounts, Washington.
N. Y., Binghamton	May	26..	Stand pipes.....	Bd. of Contract & Supply.
N. Y., Albion	May	26..	Water works improvements.....	E. S. Eaton, Vil. Clerk.
R. I., Exeter	10 a.m., May	27..	Water pipe and sewer extensions for the Rhode Island School for the Feeble Minded.....	Bd. of Control & Supply, State House, Providence.
Ia., Onslow	8 p.m., May	28..	Water works, including well, pump house, pump, engine, tank and one mile of 4 to 8-in. pipe.....	Chas. P. Chase, Con. Engr., Clinton.
Ill., Aurora	5 p.m., May	28..	Drilling and casing 2,200 ft. well.....	Board of Public Works.
Md., Frederick	2 p.m., May	28..	12-in. c-i. water mains and specials.....	Board of Aldermen.
Mont., Crow Agency	May	29..	Installing water system.....	J. B. Houston, Dept. Q. M., Wash., D. C.
Ont., Petersburg	Noon, May	31..	Complete pumping unit.....	S. R. Armstrong, Secy. Utility Com.
Pa., Ridgeway	June	1..	Addition to filter plant.....	F. W. Ward, Boro. Engr.
Minn., Evansville	4 p.m., June	1..	Drilling 10-inch tubular well.....	I. J. Jacobson.
O., Youngstown	Noon, June	1..	Furnishing tools for drilling artesian well.....	C. W. Baker, City Clk.
Mo., Caruthersville	June	2..	Improvement to water works.....	W. D. Byrd, Mayor.
Conn., Hartford	June	2..	Constructing dike at Nepaug Reservoir.....	C. M. Saville, Chief Engr.
W. Va., Wheeling	June	2..	Water turbines, air compressors, etc.....	U. S. Engineer.
S. D., Ipswich	1.30 p.m., June	3..	Building concrete reservoir and making pipe connections.....	L. T. Fix, City Aud.
Fla., Plant City	June	5..	Water works equipment.....	E. W. Mays, Supt. W. W.
Ia., Spillville	6 p.m., June	5..	Water mains and 30,000-gal. tank or 50,000-gal. reservoir.....	Des Moines Bridge & Iron Wks., Engrs, Des Moines, Ia.
LIGHTING AND POWER				
Pa., Titusville	May	24..	Electric lighting system.....	City Manager Holstein.
Neb., Ceresco	2 p.m., May	24..	Light plants.....	Grant & Fulton, Engrs., Lincoln, Neb.
Mass., Holyoke	2 p.m., May	25..	400,000 gallons gas oil.....	J. J. Kirkpatrick, Mgr. Gas & Electric Dept.
Fla., New Smyrna	3.30 p.m., May	26..	Machinery for pumping plant.....	G. W. Brown, Chm. Bd. P. W.
O., Cleveland	May	27..	Ornamental glass globes.....	A. R. Callow, Comr. Pur. & S.
N. Y., New York	11 a.m., May	27..	Furnishing 1,500 cast-iron lamp posts.....	Wm. Williams, Comr.
Ore., Harrisburg	May	28..	35, 25, 15 h.p. motors.....	R. W. Davis, Mayor.
O., Cleveland	Noon, May	28..	Poles for light department.....	A. R. Callow, Comr. Pur. & S.
O., Dover	Noon, June	1..	Street lighting for ten years.....	Clifford Pease, Vil. Clk.
Mass., Boston	Noon, June	1..	Electric light plant for Rainsford Island.....	John O'Hare, Chm. Bd.
N. Y., Hudson	June	2..	Laying gas mains.....	Comr. Pub. Wks.
N. C., Cape Fear	3 p.m., June	7..	Electric lighting plant.....	J. A. Wetmore, Act. Superv. Architect, Washington.
Ind., La Porte	June	10..	Mechanical stokers for Court House Building.....	County Comrs.
Okl., Adamson	Sept.	20..	Electric light plant.....	Frank Mann, Engr.
FIRE EQUIPMENT				
N. J., Highland Park	8 p.m., May	26..	Additions to fire engine house and fire alarm tower.....	F. A. Metzrath, Boro. Clk.
N. Y., Binghamton	4 p.m., May	26..	Erecting fire escapes, standpipes, siamese connections and installing automatic sprinkling systems in city school buildings.....	B. W. Foster, Clerk.
Ore., Portland	May	26..	85-foot automobile aerial truck.....	City Pur. Agent J. R. Wood.
BRIDGES				
Ill., Walnut	2 p.m., May	22..	Reinforced concrete bridge.....	Ill. State Hwy. Com., Springfield.
Ind., Richmond	11 a.m., May	22..	Repairs to concrete bridge.....	L. S. Bowman, Co. Aud., Wayne Co.
N. Y., Jay	May	22..	124½-ft. iron bridge.....	F. A. Torrance, Town Sup.
N. Y., LeRoy	May	22..	Two steel bridges.....	C. A. Chapman, Town Clerk.
Minn., Hibbing	1 p.m., May	22..	Three concrete and steel bridges.....	V. J. Benoe, Town Clk.
Wis., Pensaukee	2 p.m., May	22..	Bridge construction.....	Frank Foster, Abrams.
Ind., Richmond	11 a.m., May	23..	Bridge repairs.....	L. B. Bowman, Wayne Co. Aud.
Ind., Ft. Wayne	10 a.m., May	23..	Concrete culverts and bridge repairs.....	Will Johnson, Co. Aud.
O., Waverly	Noon, May	24..	Street improvement over canal.....	L. B. Eylar, Co. Aud.
Wash., Montesano	1.30 p.m., May	24..	Three bridges.....	County Comrs.
Ky., Henderson	May	25..	Constructing 11 bridges and one reinforced concrete culvert.....	S. H. Kimmell, Co. Rd. Engr.
Va., Christianburg	May	25..	80-ft. steel bridge.....	G. P. Coleman, Richmond.
Neb., Butte	1 p.m., May	25..	Number of concrete bridges.....	S. A. Richardson, Boyd Co. Aud.
N. D., Lakota	2 p.m., May	25..	Furnishing metal culverts.....	Oscar Moen, Co. Aud.
Ky., Georgetown	May	25..	Furnishing 50 culverts.....	J. B. Prather, Rd. Engr.
Minn., Detroit	2 p.m., May	25..	Constructing three bridges.....	J. A. Narun, Co. Aud.
Pa., Indiana	May	26..	3 reinforced concrete bridges.....	J. Bennet, Co. Cont., Indiana Co.
N. J., Freehold	11 a.m., May	27..	Constructing wooden bridge.....	C. E. Close, Clerk.
Pa., Redding	10 a.m., May	27..	Reinforced concrete girder bridge.....	D. K. Hoch, Co. Controller.
N. J., Brielle	May	27..	Bridge.....	Board of Chosen Freeholders, Monmouth Co. County Comrs.
Md., Rockville	May	27..	2 concrete bridges.....	F. H. Brown, Elk River.
Minn., Otisco	2 p.m., May	27..	Concrete and iron bridge.....	F. W. White, Town Clk.
Minn., Hancock	10 a.m., May	27..	Three steel and concrete culverts.....	J. Gleerun, Co. Clk.
Mich., Grand Haven	Noon, May	28..	Truss bridge on concrete piers.....	H. M. Barber, Town Clk.
N. Y., Canton	2 p.m., May	28..	2 steel truss bridges.....	Bd. of Chosen Freeholders County Clk.
N. J., North Plainfield	11 a.m., May	28..	Reinforced concrete bridge.....	C. L. Stoner, Clk. Stark Co. Comrs.
Mich., Grand Haven	May	28..	495-ft. span, pony truss bridge.....	
O., Canton	10 a.m., May	28..	Plate girder bridge with concrete substructure and brick pavement.....	

## BIDS ASKED FOR

STATE	CITY	REC'D UNTIL	NATURE OF WORK	ADDRESS INQUIRIES TO
Wis., De Pere	.....May 29..	Repairing and painting steel bridge and creosoting road-way, cost \$21,000.....	H. R. Albert, Engr., Queen Bay.	
N. Y., Wallkill	.....2 p.m., May 29..	Concrete-steel arch.....	Town Clerk.	
Ill., Quincy	.....11 a.m., May 29..	Reinforced concrete bridge costing about \$550.....	Ill. State Hwy. Com., Springfield.	
Minn., Roseau	.....10 a.m., May 29..	Constructing bridge.....	Town Clerk.	
Wis., De Pere	.....3 p.m., May 29..	Repairing Fox River bridge.....	City Clerk.	
La., Red Oak	.....1 p.m., May 30..	Bridges and culverts.....	Montgomery Co. Aud.	
Wash., Tumwater	.....May 31..	Constructing concrete bridge to cost \$10,000.....	Co. Comrs., Olympia.	
O., Cincinnati	.....June 1..	350-ft. bridge, cost \$165,000.....	Philip Fosdick, Dir. P. Ser.	
N. D., Minot	.....2 p.m., June 1..	Five bridges and repairs.....	L. G. Thompson, Co. Aud.	
S. D., Watertown	.....2 p.m., June 1..	Five reinforced concrete and steel bridges.....	J. S. Johnson, Co. Aud.	
Ill., Chicago	.....Noon, June 1..	Constructing trunnion bascule bridge.....	Thos. Rodd, Chf. Engr. Union Sta. Co.	
La., Westlake	.....Noon, June 1..	Approach to bridge.....	W. E. Atkinson, New Orleans State High. Engr.	
La., Lake Charles	.....11 a.m., June 1..	Reinforced concrete arch bridge with bascule.....	E. C. House, Clk. Police Jury, Calcasieu Parish.	
Minn., Brainerd	.....2 p.m., June 1..	Redecking with creosote blocks.....	C. W. Mahlum, Co. Aud.	
La., New Orleans	.....Noon, June 1..	Bridge approach.....	W. E. Atkinson, Engr., St. Hwy. Dept.	
Del., Georgetown	.....June 1..	Bridge.....	D. Gun, Co. Rd. Engr.	
S. D., Clear Lake	.....2 p.m., June 1..	Steel bridges and concrete arches.....	J. M. Wold, Co. Aud.	
O., Toledo	.....Noon, June 1..	Constructing bridge; repairs to bridge.....	A. W. Boardman, Dir. P. S.	
Minn., Little Falls	.....June 3..	Constructing steel bridge.....	A. Herum, Chm. Comrs.	
Pa., Meadville	.....1 p.m., June 3..	160-ft. span, Warren truss, 80 ft.....	County Comrs.	
O., Columbus	.....June 4..	Bridge construction.....	John Scott, Clk. Co. Comrs.	
Tex., St. Jo.	.....8 p.m., June 7..	Steel or concrete bridge.....	D. C. Berry, Ch. St. Com.	
Ind., Shelbyville	.....June 8..	Reinforced concrete bridges.....	F. W. Pagel, Co. Aud.	
Ind., Kokomo	.....2 p.m., June 8..	Concrete bridge.....	E. B. Swift, Aud. Howard Co.	
Cal., Stockton	.....10 a.m., June 8..	Bridges to cost \$130,000.....	F. E. Quail, San Joaquin Co. Surv.	
Ind., Kokomo	.....2 p.m., June 8..	Constructing concrete bridge.....	E. B. Swift, Co. Aud.	
O., Hamilton	.....10 a.m., June 9..	Constructing concrete-steel bridge.....	W. W. Crawford, Co. Aud.	
MISCELLANEOUS				
N. Y., New York	.....2 p.m., May 24..	Eight trailers.....	M. M. Marks, Boro. Pres.	
N. J., Newark	.....2:30 p.m., May 24..	Two automobile ambulances.....	Board of Health	
N. J., Woodbridge	.....8:30 p.m., May 24..	30 carloads crushed trap rock and screenings, and Trinidad Asphalt A.....	A. Keyes, Township Clerk.	
D. C., Washington	.....May 24..	Furnishing structural steel.....	Superintendent of Prisons, Dept. of Justice.	
Minn., Duluth	.....10 a.m., May 24..	Sprinkling and cleaning streets.....	W. H. Borgen, City Clk.	
Minn., Marshall	.....9 a.m., May 24..	Road machinery (plows, scrapers, graders).....	E. S. Shepard Co. Aud.	
Colo., Denver	.....May 25..	150,000 bbls. Portland cement.....	U. S. Reclamation Service.	
Pa., Johnstown	.....Noon, May 25..	40 to 80 h.p. automobile police patrol.....	408 Commonwealth Bldg., Denver, or Washington, D. C.	
N. C., Wilmington	.....1 p.m., May 26..	22,000 bbls. Portland cement and 19,700 yds. crushed stone.....	Nathan Miller, Supt. Finance.	
D. C., Wash	.....May 28..	Cement roofing tile.....	H. W. Stickle, Maj. Engrs	
N. Y., New York	.....May 29..	Furnish. & placing riprap stone at Sandy Hook seawall.....	Major F. C. Boggs, Pur. Officer, Panama Canal.	
N. J., Bradley Beach	.....7 p.m., June 1..	Garbage removal for one year or three years.....	F. V. Abbott, Col. Engrs., 39 Whitehall St., New York	
N. J., Trenton	.....11 a.m., June 3..	Number plates for motor vehicles, etc.....	W. E. McDonald, Comr. Pub. Health & Safety	
Minn., Mantorville	.....June 5..	Furnishing elevating road grader.....	Wm. L. Dill, Com. Water. Co. Aud.	
La., Webster City	.....1:30 p.m., June 7..	Constructing drainage ditch.....	A. J. Peterson, Co. Aud.	
Cal., San Jose	.....11 a.m., June 7..	Furnishing 50,000 bbls. Portland cement.....	H. A. Pfister, City Clk.	
Ind., Shelbyville	.....10 a.m., June 8..	Erecting two fire-escapes.....	F. W. Pagel, Co. Aud.	
Ariz., Fort Huachuca	.....June 9..	Electric light and refrigerating plant.....	Constr. Q. M.	
D. C., Washington	.....2 p.m., June 21..	Construction Postoffice at Cuero, Texas.....	J. A. Wetmore, Act. Sup. Arch.	

## STREETS AND ROADS

**Little Rock, Ark.**—Five hundred miles of road work to cost \$2,700,000 will be done in Arkansas this year.

**St. Johns, Ariz.**—The Board of Supervisors of Apache county has sold entire road bond issue of \$125,000. Buyers are eastern parties who made purchase through Powell, Gerard & Co., of Chicago.

**Auburn, Cal.**—The Auburn Chamber of Commerce has instituted movement for improvement by state of road between Auburn and Mormon Island, near Folsom, Sacramento County.

**Burlingame, Cal.**—All unimproved streets in city of San Mateo, from Fifth to Peninsula Ave., and from El Camino Real to D St., are to be paved, City Trustees at their last meeting having adopted plans and specifications for the work. As result of the action of Trustees, seventeen different streets will be paved, total of thirty-eight blocks.

**Hanford, Cal.**—Voters of Kings county have voted affirmatively on question of issuing \$672,500 bonds to finance construction of 108 miles of permanent good highways connecting all cities and community centers in county with county seat and connecting at several points with Hanford-Visalia lateral of State highway.

**Pasadena, Cal.**—One of most important pieces of street work since paving of Oak Knoll is in contemplation, which, if carried out, will cost in neighborhood of \$75,000. Petitions have been placed in circulation among property owners in district adjoining Oak Knoll for putting in of two miles of bitulithic pavement. It is planned to pave with this high-class pavement South Los Robles, Madison and Oakland Aves. from Call-

fornia St. to Glenarm St., and also Fillmore, Alpine and Glenarm Sts. from Los Robles Ave. to Madison Ave. It is figured out that this means approximately two miles of bitulithic, the cost of which is 17 cts. a sq. ft.

**Sacramento, Cal.**—Special appropriation bills aggregating more than \$750,000 have been passed by Assembly. Two appropriations of \$50,000 each provide for survey and construction of State highway through Pacheco Pass connecting highway in Santa Clara county with highway in Madero county, and construction and survey of highway from Bakersfield through Cholame pass to the highway in San Luis Obispo county. Appropriation of \$20,000 was voted for street improvements fronting property of San Jose State normal school.

**Sacramento, Cal.**—The Avey Bill, proposing a \$12,000,000 State bond issue for completion of State highway system, including mountain laterals, has passed the House and goes to Senate for a vote. It would present to the people of State at next general election, or special election, if one is held, a proposal for supplementary fund to \$18,000,000 bond issue to complete and amplify work begun in this State for good roads. Interest on bonds will be 4½ per cent.

**Sacramento, Cal.**—The San Joaquin-Amador highway bill, introduced by Assemblyman Kerr of Jackson, carrying appropriation of \$15,000, has passed in the Assembly. It is provided that appropriation shall be used in locating and surveying proposed road.

**Sacramento, Cal.**—An appropriation of \$3,000 has been approved by Assembly for location, survey and construction of a State highway from Lake Tahoe City, Placer county, along northern boundary of State of Nevada, at Crystal Bay in Placer county.

**Sacramento, Cal.**—Construction of concrete State highway lateral from Roseville to Auburn, completion of trunk line in Placer county, and immediate building of Bear River bridge at expense of Placer county have been decided on at meeting of Placer Supervisors with State Highway Commission in Sacramento. Bids will be advertised within four months.

**San Jose, Cal.**—The Pacheco Pass road proposition has been eliminated by State Legislature in favor of general bill, which will be submitted to voters of California at election in 1916, providing for appropriation of \$15,000,000 for completing state highway system. Of this amount \$12,000,000 will be for use on main highway lines as proposed by original act and \$3,000,000 will be for extensions reaching from interior to coast.

**Stockton, Cal.**—If plans of city officials are carried out as outlined some 50 blocks or more of Stockton streets will be improved with asphalt macadam during coming summer. It is estimated that cost of these vast improvements will figure up to \$80,000.

**Sunnyvale, Cal.**—The initial steps for paving of Murphy Ave., Sunnyvale's principal business thoroughfare, between Evelyn and Washington Aves., have been taken. The type of paving proposed to be used is known as "Road-amite," and specifications call for a 5-in. macadam base with a ¾-in. wearing surface. This material has been extensively used in improving roads of San Mateo County during past year, and many miles of pavement of same character have been laid in Oakland and Southern California cities.

**Willows, Cal.**—District Attorney Ben F. Geis has received communication from State Highway Commission, ask-



ing Glenn county to finance sale of \$50,000 worth more of State highway bonds.

**Pueblo, Colo.**—Total cost of new Court St. paving work will be \$60,751, plus 6 per cent for engineering, according to estimate filed with city commissioners by City Engineer D. P. Gaymon.

**Daytona, Fla.**—On Tuesday, June 8, qualified voters within contemplated district comprising all of this commissioner district and portion of New Smyrna district will have opportunity to register their approval or disapproval of proposed \$400,000 bond issue to raise funds with which to pay for construction of about 50 miles of brick or other hard-surfaced road through and within said district.

**De Land, Fla.**—Petition has been presented by citizens of DeLand Commissioner's District asking that bonding election be called to authorize formation of bridge and road district, and issue of bonds to amount of \$350,000 for purpose of building hard surfaced roads.

**Green Cove Springs, Fla.**—Great interest is being shown by citizens in coming election which is to be held on May 18, when people will vote on proposed \$450,000 bond issue for good roads.

**Sanford, Fla.**—City Council has decided to have Park Ave. from 10th St. to Hughey Ave. and from Hughey to Sanford Ave. paved with brick, thus giving people on Sanford Heights a good paved road through this beautiful suburb.

**Pensacola, Fla.**—To replace present road machinery with modern equipment, Board of County Commissioners has awarded contracts for two motor trucks, one of five and other of ten-ton capacity, with trailers, costing \$10,000. Board also called for bids for number of trailers, which will be purchased later.

**Sterling, Ill.**—Road Commissioner Landis has stated that he is getting ready to oil a greater share of roads running out of Sterling in very near future. He has ordered tank of oil containing 8,700 gals.

**Indianapolis, Ind.**—The Ninth Ward Democratic Club has sent to Board of Works resolutions favoring improvement of New York St., between Randolph St. and Tacoma Ave.

**Indianapolis, Ind.**—Board of Works has directed city engineer to prepare plans and specifications for permanent improvement of Keystone Ave. from Washington St. to Michigan St.

**Indianapolis, Ind.**—Board of Works has received resolution for widening of North Meridian St., between 16th St. and Fall creek. The street is to be widened 6 ft., of which 3 ft. will be taken from property on either side. The roadway will be made 36 ft. wide.

**Richmond, Ind.**—Cronin and Meredith of this city were lowest bidders for brick paving on 6th St. and South A St., \$1.75 a sq. yd. in each instance, one of lowest bids for brick paving received by board in a long time. F. E. Slick of this city was lowest bidder for brick paving on North 5th St. His bid was \$1.79 9-10 a sq. yd., one-tenth of cent less than bid entered for improvement of this street by Cronin and Meredith. The Union Asphalt Construction Co. of Indianapolis entered lowest bids on all three improvements for asphalt paving, its bid being same in each instance, \$1.93 a sq. yd. for one and a half inch binder and a two-inch surface, and \$1.70 a sq. yd. for one-inch binder and one and a half inch surface. Bids for concrete paving on North 5th St. were high because of double street car tracks and probably will not be favorably considered by the property owners. Bids for concrete paving were lowest of any entered to secure contracts for improving 6th St. and South A St., Harding & Slatery of Crawfordsville bidding lowest in each instance. This firm made a bid of \$1.35 per sq. yd. for South A St. and \$1.25 per sq. yd. for 6th St. Six firms submitted bids for South A St. contract, eight for 6th St. contract and eight for the 5th St. contract. Fifteen blocks to be paved have area of about 20,000 sq. yds. and under bids received for brick paving, which board has ordered, total cost will be approximately \$35,000.

**Clinton, Ia.**—Council has ordered preparation of resolution for paving 4th St. from 5th and 10th Aves.

**Council Bluffs, Ia.**—Pottawattamie county will issue bonds in sum of \$140,500 to fund the debts existing in road and bridge funds.

**Emporia, Kan.**—Ordinance has been passed providing for grading, draining, curbing, guttering and paving of West St. from 12th Ave. to 15th Ave., and 15th

Ave. from West St. to Rural St., all in city of Emporia.

**Lawrence, Kan.**—Specifications for pavement of alley between Ohio and Louisiana from 7th to 8th and from 13th to 14th Sts. have been submitted to Commission and they will advertise for bids on work in near future. Work will be let by contract.

**Frankfort, Ky.**—The Franklin County Fiscal Court has voted to use its State-wide appropriation of \$6,000 on Louisville and Versailles pike. This with State's share will make \$12,000.

**Lancaster, Ky.**—At May meeting of City Council at Stanford, ordinances were passed providing for laying of concrete pavements at number or points where complaint has been made of present paving facilities. Seven concrete crossings were also ordered.

**Murray, Ky.**—Pursuant to order of County Judge L. A. Langston and Fiscal Court of this county, special election will be held May 29, for purpose of taking census of people of Calloway county in regard to voting bond issue of \$200,000 for purpose of building better roads throughout the county.

**Richmond, Ky.**—City Council has voted to pave main thoroughfare of city with brick streets.

**Bangor, Me.**—A gravel highway, built in accordance with specifications of State Highway Commission, seems now to be solution for improving roadway on Main St. from Cedar St. to Hampden town line.

**Bangor, Me.**—Following bids have been received and opened by City Council on wood paving in postoffice square and granolithic sidewalks for Central and Harlow Sts.: Otto Nelson & Co., \$4.26 per square yard; John Grady & Son, \$3.68 per square yard; J. F. Spellman & Sons, \$3.50 per square yard. Bids for granolithic sidewalks in Central St. were opened as follows: W. E. Givern, \$1.91 per square yard; Otto Nelson & Co., \$1.40 per square yard; J. F. Spellman & Sons, \$1.75 per square yard; John Grady & Son, \$1.64 per square yard. For granolithic sidewalks in East Market square bids were as follows: John W. Norris & Co., \$1.91 per square yard; John Grady & Sons, \$2 per square yard; W. E. Givern, \$1.95 per square yard; Otto Nelson & Co., \$1.40 per square yard; J. F. Spellman & Sons, \$1.75 per square yard. After bids had been read, a member of firm of J. F. Spellman & Sons informed board that he had based his bid on assumption that whole square was to be paved. If a less amount was to be done his bid would have been changed. It was finally decided to reject all bids, and to ask for new ones, work to cover enough of the square to form a continuation of wood paving on Harlow and Exchange Sts. These bids will be entered at a special meeting.

**Beverly, Mass.**—Bids will be received until 7 p. m., May 25, by Committee on Public Service and Aid for reconstructing with Hassam block pavement portion of Rantoul St. (about 10,500 square yards). G. F. Goldthwait is chairman, F. B. Browning is Clk. of Committee.

**Boston, Mass.**—Paving of downtown streets is being discussed.

**Newburyport, Mass.**—Ordinance is being considered by Common Council which provides for issuance of paving bonds in sum of \$50,000.

**Taunton, Mass.**—Committee on Finance will recommend to Municipal Council the adoption of \$25,000 highway permanent improvement loan appropriation with one amendment.

**Taunton, Mass.**—The orders for appropriations of \$11,000 for rebuilding Pine St. school and of \$25,000 for permanent highway improvements have been adopted at meeting of Municipal Council.

**Flint, Mich.**—Ordinances have been passed for improvement of various streets.

**Grand Rapids, Mich.**—According to tentative compilation prepared for Alderman Emmer, chairman of Council Ways and Means Committee, by General Manager Cutcheon of Board of Works, the total amount of street and sewer work under 5-year payment plan, to be provided for by probable bond issues this year in Grand Rapids, will be \$142,000.

**Grand Rapids, Mich.**—Estimate for grading and paving Lafayette Ave. from Wealthy to Franklin St. with bituminous concrete shows cost will be \$18,730, or \$3.66 per front foot. The grading

and paving of Sheldon Ave. from Fulton to Wealthy St. will cost \$24,000, or \$4.50 per front foot.

**Sault Ste. Marie, Mich.**—Chippewa County will make application to state highway department for construction of 14-foot state trunk line road, of stone construction, between this city and Pickford.

**Duluth, Minn.**—Ordinance has been passed appropriating \$30,000 for construction of sidewalks.

**Eveleth, Minn.**—Clerk has been instructed to advertise for bids for paving on Monroe, Pierce, Jones, Jackson and Hayes Sts. between Adams Ave. and Grant Ave. and on Jones St. between Grant Ave. and Douglas Ave.

**St. Paul, Minn.**—Council has passed for final adoption ordinance introduced by Commissioner Goss appropriating \$40,000 for paving of intersections of Snelling Ave. from Summit Ave. to Como Park.

**Carthage, Mo.**—A heavy wagon has been ordered purchased by street committee for use in hauling oil tank used in oiling the streets.

**Joplin, Mo.**—Resolution has been adopted declaring it necessary to construct 3½-in. wood block pavement, 16-lb. treatment, with sand filler, asphalt expansion joints, on the roadway part of Joplin St., from the south line of Fourth St. to the center line of Sixth St. Estimated cost, \$4,812.

**Maryville, Mo.**—Council has voted to purchase street flusher for \$1,575.

**Maryville, Mo.**—Maryville will add about one and one-fifth miles of asphalt or tar paving this spring and summer to eight and one-half miles of brick paving it already has, if City Council will abide by report made by street committee after investigating all paving remonstrances.

**Meridian, Miss.**—County Board of Supervisors have ordered election to be held in supervisors' district one, in which Meridian is situated, to determine whether or not \$50,000 in bonds shall be issued to connect good roads and paved streets of city.

**Hastings, Neb.**—Preliminary steps for calling of special election for voting of \$50,000 issue of intersection bonds and for creation of extensive paving district have been taken by Council. Five new paving petitions and request for special election were presented, the latter as well as three of the paving petitions being filed by Councilman Gardiner. The districts outlined are: Burlington Ave. from Third to Twelfth; Seventh St. from Lincoln to Bellevue; Lexington Ave. from Seventh to Ninth; Sixth St. from Lincoln to Baltimore; Bellevue Ave. from Second to Seventh.

**Elizabeth, N. J.**—Repaving of old telford streets is being discussed.

**Keyport, N. J.**—At meeting of Keyport Boro. Council it was announced that approximate cost of laying cement road from corner of Front St. to intersection of Broad and Main Sts. would be \$27,000, with additional cost of \$4,000 to complete road to end of boro limits. Plans presented by Engineer George D. Cooper have been approved.

**New Hope, N. J.**—The township macadam roads between this borough and Doylestown are expected to be completed this summer, according to present plans.

**Plainfield, N. J.**—Bids have been asked for by Union County Board of Freeholders for construction of big highway between Springfield and Summit. Probabilities now are that county will build road under plans prepared by Engineer Jacob L. Bauer.

**Rahway, N. J.**—Council has decided to advertise for bids for paving Milton Ave. from railroad to St. George Ave. with sheet asphalt.

**Trenton, N. J.**—Committee has decided to expend approximately \$2,800 for road binders. The materials to be used are Texas asphalt, glutrin and ugit. The Scotch Road, from the Odd Fellows Home to the Ewing Presbyterian Church; the River Road, from the city line to Washington's Crossing, and the Upper Ferry Road, from Trenton Junction to Scudder's Falls, will be treated with Texas asphalt. Total distance is about 10 miles and cost is estimated at \$1,200. Glutrin will be used on road from Penn's Neck to Princeton, a distance of about two and one-half miles. Material will cost \$211 a mile, or \$537.50 for the road. The thoroughfare was treated with the same material last year at a cost of about \$540 a mile. The difference in cost this year is caused by the fact that it was previously treated. Ugit will be used on the road from White Horse to Allentown, a distance of about three miles. The cost

for the material is not to exceed \$350 a mile.

**Westfield, N. J.**—Board of Park Commissioners has decided to ask Town Council for \$25,000 for improvement of Broad St. and Mountain Ave. Park.

**Albany, N. Y.**—Bids for road repairs, Contract No. 716, Onondaga County, 14 miles, have been opened by State Highway Department. There were five bidders, lowest being Dana W. Robbins, of New York. His bid was \$7,124.68. The Pathfinder Construction Co. of Fulton submitted lowest bid for Contract No. 712, Cortland County. The bid of this firm was \$4,350.65. There were seven other bidders. Six bids were submitted for Contract No. 740, Tompkins County. Lowest was that of J. H. Weidman, of Syracuse, \$4,888.19.

**Binghamton, N. Y.**—City Clerk has been directed to advertise for bids for laying of pavement of brick concrete, wood block, bitulithic or concrete on Beethoven St., proposals to be received June 23.

**Binghamton, N. Y.**—Mayor William R. Ely has signed ordinances passed by Common Council relative to issuance of city notes for Conklin Ave. and North Chenango St. pavements, reduction in width of Conklin Ave. and request to Highway Department to improve Conklin Ave.

**Endicott, N. Y.**—A paving campaign is now in full swing. The village board of trustees, acting with Endicott, Johnson & Co. and leading citizens, has worked out scheme of street improvement which will give Endicott a completely paved town within five years and pavement for all the streets in heart of the village before end of 1915. Streets to be paved this year are: North St., from Oak Hill Ave. to Garfield Ave., total expense borne by Endicott, Johnson & Co.; Washington St., Main to North; Broad St., Lincoln Ave. to Main St.; Monroe St., Madison Ave. to Garfield Ave.; Park St., from Lincoln Ave. to Main St.; Madison Ave. from Park St. to North St. and Garfield Ave. from Main St. to North St. Thirty-five thousand dollars will be spent this year in work outlined, outside of the Washington Ave. paving, bonds for this work having been already voted.

**Fredonia, N. Y.**—Fredonia village trustees have voted to advertise for sale the \$18,000 issue of bonds for village's share of state road work from Water St. bridge south over Water and Liberty Sts., and Porter Ave. to Laona. Bids are to be opened May 24.

**Little Falls, N. Y.**—County Attorney Newberry and County Treasurer Watts have sold \$102,000 worth of highway bonds to Kahler & Co. for county. Mr. Newberry has also disposed of \$50,000 worth of city hall bonds to same company.

**Owego, N. Y.**—County Treas. Thomas H. Reddish has received allotment of State money for various towns in Tioga county for use by town superintendents of highways for maintenance and repair of county highways. The appropriations, which are made under provisions of State highway law, are: Barton, \$2,015.82; Berkshire, \$1,110.34; Candor, \$3,874.74; Newark Valley, \$1,611.93; Nichols, \$1,218.84; Owego, \$4,891.37; Richford, \$1,488.60; Spencer, \$1,610.72; Tioga, \$3,175; total, \$20,997.36.

**Rochester, N. Y.**—First ordinances for improvements to cost \$155,000, as estimated, have been adopted as follows: Marion St., asphalt pavement, \$16,000; Thurston Rd., brick pavement, \$38,000; Bradburn, asphalt pavement, \$2,100; Post Ave., brick pavement, \$6,100; Chili Ave., asphalt pavement, \$36,000; Pinnacle Rd., asphalt pavement, \$14,500; Pioneer St., sewer, \$800; Cottage St., extension, \$1,800; W. High Ter., extension, \$50; Hunting Park, care and embellishment, \$175. Final ordinances for work of estimated cost of \$140,000 have been adopted as follows: Graves St., tunnel sewer, \$12,000; Primrose St., grading, walks and sewer, \$1,300; Electric Ave., bitulithic pavement, \$15,000; Villa St., asphalt pavement, \$12,000; Laburnum Crescent, walks, \$200; Roselyn St., grading, walks and sewer, \$4,800; North St., asphalt pavement, \$41,000; Thurston Rd., Gardner Ave. and West Ave., outlet sewer, \$34,000; N. Goodman St., pavement, Clifford Ave. to Fernwood Ave.

**Schenectady, N. Y.**—Bids will be opened shortly for laying of 22,000 square yards of stone filled asphalt pavement in several streets, also large amount of sanitary sewers.

**Syracuse, N. Y.**—At session of Onondaga County Board of Supervisors, resolutions were passed providing for improvement of three county highways.

Estimated cost of building the highway through the villages of Manlius and Minoa and the town of Manlius is \$118,700. Of this amount, the State is to pay \$72,540, the county of Onondaga \$39,060 and Manlius \$7,100. The second resolution adopted calls for building and improvement of county highway from South Bay to Chittenango bridge, near Bridgeport, a distance of 8.85 miles, in the town of Cicero, and from the Manlius town line to Chittenango creek bridge, 3.06 miles, in the town of Cicero. This work will cost \$74,000, of which the State pays \$48,100 and the county \$25,900. A third resolution calls for building of Eastwood highway from Burnet Ave., in this city, to East Syracuse, through Eastwood, at expense of \$56,500. Of this State is to pay \$28,560, county \$15,540, village of Eastwood \$4,300 and village of East Syracuse \$7,900.

**Winston-Salem, N. C.**—Davidson county is arranging to begin work at once building county highways, funds having been provided by act of last general assembly in sum of \$300,000.

**Rolla, N. D.**—Two lowest bids for 3,000 ft. of cement sidewalks were: Warren Campbell, Cavalier, N. D., at 10 1/4 cts. per sq. ft. and 19 cts. for crossings, and Dan Nelson at 10 cts. per sq. ft. and 19 cts. for crossings.

**Cincinnati, O.**—County Commissioners have approved estimate of Surveyor Boeh for improvement of Winto Road at estimated cost of \$21,990 from North Bend Road to Mill Road. Plans and specifications for improvement of Werk Road, from Bridgetown Road to South Ave., at an estimated cost of \$11,431, were ordered.

**Cincinnati, O.**—Council has concurred in report of Streets and Parks Committee to proceed with improvement of Montgomery Pike from Hewitt and Woodburn to Norfolk & Western Railroad.

**Defiance, O.**—Providence Savings Bank and Trust Co. of Cincinnati has been awarded \$5,200 road bond issue for premium of \$53.56.

**Findlay, O.**—Bids for 36,000 sq. yds. pavement have been received from C. B. Hall & Son, Findlay, O.; Brooks Construction Co., Ft. Wayne, Ind.; H. P. Stricker Co., Toledo, O., and W. W. Hatch & Co., Goshen, Ind.

**Huntsburg, O.**—Election has resulted in favor of issuing road bonds in sum of \$30,000.

**Marion, O.**—Resolution to improve High St. from Church St. to Center St., by grading, setting curbs and paving the roadway with some substantial material, has been given three readings and adopted.

**Niles, O.**—Bids will be received at office of Homer Thomas, city auditor, for purchase of bonds in sum of \$6,500 for purpose of paying city's portion of paving various streets.

**Port Clinton, O.**—County road bonds in sum of \$21,500 have been sold to Spitzer & Co. of Toledo.

**Condon, Ore.**—County Commissioners have decided to hard surface one mile of road this year and if satisfactory arrangements can be made this road will connect with city's pavement. Plan of court is to hard surface at least one mile each year.

**Chester, Pa.**—City Council has instructed Superintendent of Highways to advertise for bids for construction of highways.

**Chester, Pa.**—City Council has instructed Superintendent of Highways to advertise for bids for paving of number of important streets and for construction of sewers.

**Chester, Pa.**—On motion of Mr. Freeman, Chief Burgess Mitchell has been authorized to advertise for bids on 10,000 gallons of asphaltum oil to be applied on borough streets.

**Chester, Pa.**—Resurfacing of number of streets is being planned.

**Connellsville, Pa.**—It is expected that two miles of road between Davidson and Broad Ford will be paved.

**Connellsville, Pa.**—An extension of State road recently constructed in Connellsville township from Stone Bridge at least a mile further, and improvement of the road almost to Pennsylvania, have been promised this summer.

**Harrisburg, Pa.**—Senator Sproul, of Delaware County, has introduced in senate joint resolution providing for again submitting to people of state question of making loan of \$50,000,000 for improvement of roads of Pennsylvania.

**Johnstown, Pa.**—County Commissioners and State Highway Commission will be urged to work for construction of

that portion of Ligonier Pike between Westmont and Johnstown.

**Kittanning, Pa.**—Paving of number of alleys is being planned.

**Philadelphia, Pa.**—Director Cooke has awarded contracts for street improvements which will cost \$218,749.93. Improvements include grading, asphalt, vitrified brick, granite block paving, wood and granite block repaving, vitrified block resurfacing, furnishing crushed rock.

**Pittsburgh, Pa.**—Allegheny County will spend more than \$500,000 in road building and improvements this summer. The Grand Jury has approved numerous projects which will be advertised until May 29, after which contracts will be awarded. Jobs and estimated costs follow: Bethel road extension, 3.92 miles, cost \$92,181.70; Brownsville extension road, 5.74 miles, \$106,190; Hope Hollow road, 0.82 of mile, \$20,300.60; New Town and Rodi roads in Wilkins and Penn Townships, 4 1/2 miles, cost \$133,711.60; McCoy road extension, 1 1/4 miles, cost \$31,330.35; Round Hill road, 2.37 miles, cost \$48,493.53; Nobletown road, 500 ft., \$2,407; Braddock and Ardmore Connecting road, 1.678 ft., cost \$9,687.50; Sankey road, 528 ft., cost \$2,676.

**Scottsdale, Pa.**—Ordinances have been passed for improvement of Brook St. between Chestnut and Hickory Sts., Grove St. between Market St. and Walnut Ave., and Loucks Ave. Contracts for these streets had been let to Contractor Luther F. Edwards of Greensburg.

**Titusville, Pa.**—City will purchase a pickup sweeper in near future. H. L. Holstein is City Manager.

**Williamsport, Pa.**—Councilman James A. L. Minor, superintendent of streets and public improvements, recommends a program of paving cross streets between 4th and Edwin St. from Elmira St. to Campbell; 5th and 7th Aves., between W. 4th St. and Pennsylvania R. R., and Walnut St., between 4th St. and Pennsylvania R. R., in his annual report. He also recommends that Council appropriate \$10,000 next year for oiling all dirt streets in city.

**Williamsport, Pa.**—At special meeting of City Council Councilman James A. L. Minor, superintendent of public improvements, introduced an ordinance providing for paving of Cedar Ave. between Hepburn and Elmira Sts. For first time in history of city a pavement made entirely of concrete will be put down.

**Greenville, S. C.**—First installment of \$1,000,000 bond issue for road improvement in this county has been bought by local man, A. G. Furman.

**Benton, Tenn.**—The new Polk County Road Commission will at once resume work on pike roads with view of building and improving a number of roads in this county. A sum of \$40,000 of the recent \$250,000 bond issue is still available for this purpose. This will be divided equally among the commissioners so that each section of county will share equally in benefits.

**Knoxville, Tenn.**—Commissioner Fleniken will make motion to advertise for bids on paving for following streets: Cumberland Ave., from Ninth St. to city limits; Atkin St., from Hannah Ave. to West Fourth Ave.; Highland Ave., from Ninth to Tenth Sts.; Calloway, from Richards St. to West Fifth Ave.; Anderson Ave., from Central St. to Cornelia.

**Knoxville, Tenn.**—The Knox county good roads bonds, amounting to \$500,000, have been sold to Divit, Trimble & Co., of Chicago, and Yard, Otis & Taylor, of Chicago, through Union National bank.

**Sweetwater, Tenn.**—Election is called in town of Sweetwater, to be held June 10, to vote on two propositions—street improvement bonds of \$5,000 and school improvement bonds of \$10,000.

**Ballinger, Tex.**—City has made appropriations for street improvements to amount of \$5,000. Appropriation will be apportioned out to respective wards and used in building gutters and street crossings.

**Bryan, Tex.**—Notice is given that County Commissioners of Brazos County will meet in court house in city of Bryan, on the 2d day of June, A. D. 1915, and will, up until 10 o'clock a. m., receive sealed bids for purchase of bonds for construction of highways in said county, in Road District No. 1, amounting to \$400,000.

**Christi, Tex.**—Bids will be received by City Secretary of City of Corpus Christi, Tex., until 4 o'clock p. m., May 28, 1915, for purchase of permanent street improvement bonds to be issued by City of Corpus Christi, to pay its share of cost



of certain paving work now contemplated. The amount of bond issue is to be \$100,000 and proposals must be for the entire issue. F. J. Mulligan is City Secretary.

**El Paso, Tex.**—Petitions asking the County Commissioners to order election to vote on issuance of \$400,000 for road construction work in El Paso County will be presented at next meeting of court. Petitions have been numerous signed and are ready for presentation to commissioners. Petitions call for bond issue not only to build new roads, but also to repair existing highways that need attention.

**Ogden, Utah.**—Probably only extensive paving work to be done in Ogden this year will be in Madison Ave., between 25th St. and 28th St. Extensive repairs are to be made to concrete pavement laid in parts of city last year.

**Ogden, Utah.**—About \$40,000 will be spent on State highways in Weber county in 1916. Plans made by Weber Commissioners include placing of tarvia on the State roads that have been macadamized and the improving of the Riverdale Rd., the North Ogden Rd., the Wilson Rd., and the highway from the mouth of Ogden canyon to Huntsville. The State Road Commissioners are to be asked to set aside the Hooper and Plain City rds. as State highways.

**Salt Lake City, Utah.**—Improvement of 25.23 miles of roads in county, installation of rock crusher and distributing bins to handle road improvement material, improvement of bridges, extension of road lights and other related improvements to be done with regular county road fund from taxes at estimated cost of \$72,491.23, are recommended in communication submitted to county commissioners by G. W. Holmberg, county road supervisor.

**Salt Lake City, Utah.**—Board of Commissioners have decided to grade, curb and gutter with cement, construct drainage system to carry water across the streets and intersections, install water service pipes to back of curb, and pave N. Temple St. between N. Main and N. State St., in paving district No. 28, with either bitulithic, rock asphalt or sheet asphalt.

**Salt Lake City, Utah.**—Four miles of concrete road will be built in Davis county as result of action of Commissioners of that county in voting to levy special road tax to raise necessary funds, according to E. R. Morgan, State road engineer.

**Portsmouth, Va.**—The Norfolk County Board of Supervisors has rejected three bids received for \$250,000 road bond issue because they were below par. After rejecting bids, body adopted resolution appointing N. Beaman as an agent for Norfolk County to negotiate sale of bonds and to report to supervisors at meeting to be held on May 18 next.

**Richmond, Va.**—The apportionment of \$534,000 bond issue for permanent improvements in annexed territory, with exception of incorporated towns, having been approved by both branches of City Council, the Administrative Board has taken steps looking toward improvement of various highways from old to new city limits. On motion of Commissioner Henry P. Beck, city engineer was directed to advertise for bids to grade all streets in Scott's Addition, including the Boulevard, from Broad St. to the Richmond, Fredericksburg and Potomac Railroad overhead bridge.

**Everett, Wash.**—Snohomish county is planning to gravel Pacific highway from grounds of Everett Golf and Country Club to 41st St.

**Kelso, Wash.**—Commissioners of Cowitz County have ordered bids on construction of portion of Mount Crawford Road, a few miles from this place.

**Superior, Wis.**—County Board has met at court house, East End, to take action on \$75,000 bond issue for road construction work in Douglas county this summer. In addition to the \$75,000 which will be derived from sale of bonds county will receive \$25,000 from State-aid fund, making total fund of \$100,000 available for highway improvements and maintenance.

#### CONTRACTS AWARDED.

**Phoenix, Ariz.**—For paving of 1st Ave. with bitulithic pavement to C. Fischer & Co. at \$1.96½ per sq. yd.

**Sacramento, Cal.**—By State Highway Commission, contracts for highway construction as follows: Sonoma County,

from Willow Brook to southerly boundary, to Twohy Bros., San Francisco, at \$39,729; Contra Costa County, from Richmond to Pinole, to Bates, Borland & Ayer, Oakland, at \$28,082; Monterey County, from Salinas to Lagunitas, to T. M. Burns, Sacramento, at \$30,662; Monterey County, from Bradley to San Ardo, to the Frank H. Smith Co., Eureka, at \$92,435.

**Stockton, Cal.**—By San Joaquin county for 25,671 tons rock macadam and for grading 22,352 cu. yds. to Cy. Moreing, Stockton, Cal., at \$2.30 per ton, and 25 cts. per cu. yd. for grading. Total, \$64,631.30. E. D. Graham is Clerk.

**Connecticut.**—Following contracts have been awarded by State Highway Commissioner, Charles J. Bennett: Town of Enfield, contract for widening of bridge and approaches over Fresh Water Brook, to the T. F. Foley Co., South Norwalk, Conn., estimated cost \$1,378.05. Town of Westport, contract for construction of section of brick over concrete base on Boston Post road in Westport, to the Connecticut Hassam Paving Co., New Haven, Conn., for approximately \$4,248.24.

**Rome, Ga.**—By city for construction of cement sidewalks to N. G. Watson, Rome, Ga., at 75 cts. per sq. yd.

**Huntington, Ind.**—V. W. Harper & Co., of Hammond, will build crushed stone pavement on Cherry and Poplar Sts. Bids of firm were low ones of dozen or more submitted to Board of Works. For the Cherry St. job the price is \$4,181.65 and on Poplar St., \$1,863.88.

**Peru, Ind.**—Ray Sullivan has been awarded contract for first concrete road to be built in this county by county commissioners. The road is half mile long and contract was sold for \$5,745. James Burke got gravel road in Jefferson township, known as Griswell Road, two miles, for \$7,648.

**Rushville, Ind.**—Contract for paving East 2d St. here with brick has been awarded to E. V. Bergen Co., of Franklin, at \$1.71 a sq. yd., by City Council.

**Dubuque, Ia.**—Delhi St. and Julien Ave. will be paved with brick and work will be done by Western Improvement Co., of Racine, Wis.

**Forest City, Ia.**—For construction of 30,000 sq. yds. vertical fiber brick to J. S. McLaughlin & Sons, Red Oak, Ia., at \$1.74.

**New Albany, Ky.**—At special meeting of the New Albany Board of Public Works, John Howe was awarded contract for city sidewalk construction under specifications adopted by Board of Public Works, at \$1.19½ a sq. yd. The board also awarded to Goulding Bros. contract for vitrified brick improvement of Market St. from Washington to Vincennes at \$8.51 a ft.

**Abbeville, La.**—Highway Department for constructing with earth about nine miles of the Abbeville Kaplan Highway, Vermillion Parish, to H. H. Shackford, of Bayou Sara, at \$14,664. W. E. Atkinson is state highway engineer, New Orleans.

**Lake Charles, La.**—By Calcasieu Parish Police Jury, 43 miles earth and gravel roads contracts: Highway 16, to Worthington Construction Co., Viterbo Bldg., Lake Charles; highways 6, 14 and 10, to Francis T. Constant, Alexandria, La.; highway 8, to Grubbs & Hebert, Orange, Tex.

**Annapolis, Md.**—Contract for improving Cornhill and Fleet Sts. and Carroll Alley, by laying bituminous concrete over the cobble stones, has been awarded to John W. Martin, the combined work to cost \$2,748.88. Frank M. Duvall got contract for paving Compromise and Claude Sts., at combined bid of \$3,896.20. John W. Martin bid at \$4,300, while bid of Thomas McGuckian & Son was \$4,217.80. William E. Feldmeyer was awarded contract for resurfacing Conduit, Union and Charles Sts., and Murray and Taney Aves. and Franklin St. with "Tarvia A." at his bid of \$1,883. John W. Martin got contract for similar work on Southgate Ave., at bid of \$384.96.

**Federalburg, Md.**—State Roads Commission has awarded to United Gas Improvement Company, of Philadelphia, contract for application of 150,000 gallons of oil to roads in Caroline, Wicomico, Somerset, Worcester and Dorchester Counties, its bid being \$9,689.80. Commission has also awarded contracts for oiling roads in Talbot, Kent, Queen Anne

and Cecil Counties to the Atlantic Refining Company at \$7,068.56. It will require 156,000 gallons of oil.

**Hagerstown, Md.**—Contract for electric street flusher has been awarded the General Motors Truck Co., of Pontiac through their agency, the Hagerstown Storage & Transfer Co.

**Boston, Mass.**—For construction of 8,000 lin. ft. of state road in Raynham, by State Highway Commission, to Snow & Farrington, Wrentham, at \$11,068. Other bids were: H. L. Thomas, Middleboro, \$11,325; Andrew M. Cusack, Boston, \$11,428; C. I. Alger, Paunton, \$11,445; Z. L. Conedy, Myricks, \$11,743; D. J. Sheehan, Lynn, \$11,892; J. M. McCormick, Providence, R. I., \$12,115; R. F. Hudson, Melrose, \$12,641; O. W. Ruckle, Providence, R. I., \$12,847; A. Williams, Boston, \$13,172; C. F. Kelly, Somerville, \$13,881; Small & Ingalls, Bar Harbor, Me., \$14,112.

**Jackson, Mich.**—For repaving approximately 15,000 sq. yds. on Main St. and 3,600 sq. yds. on Seymour St., to William Ryan, Lansing, at \$1.94 sq. yd.

**Saginaw, Mich.**—Contract has been awarded to S. S. Saxton Co., of Chicago, Ill., for Trinidad sheet asphalt on 6-in. concrete base at \$1.33 per sq. yd., and for Trinidad sheet asphalt on old macadam at \$1.03 per sq. yd. (35,000 sq. yds.) City furnishes cement. Geo. Holcomb is Comr. of Public Works.

**Saginaw, Mich.**—Contract has been awarded to the Johnson Construction Co. of Chicago, Ill., for 3-in. creosoted block on 6-in. concrete base, using long leaf yellow pine, No. 2 oil and pitch filler at \$2.45 per sq. yd. (12,000 sq. yds.), and contracts has been awarded to D. La Londe of Saginaw for Saginaw brick on old macadam base at \$1.31 per sq. yd. (4,500 sq. yds.) City furnishes cement. Geo. Holcomb is Comr. of Public Works.

**Aitkin, Minn.**—County Commissioners have let contract to J. J. Martin of Hill City to build 6 miles of road from Shovel Lake to Hill City.

**Buffalo, Minn.**—By Wright county for paving to J. F. Schmolet, Waverly, at \$1,406.40.

**Duluth, Minn.**—Bids have been opened by Secretary Culver of public works division on constructing cement sidewalks west of 12th Ave. west. Olson & Johnson entered lowest bid, with their proposal of \$5,069, and in all probability they will be awarded the contract. Other bidders were: John Stocker, \$5,242, and Fredericks & Berg, \$5,111, the latter bid being incompetent.

**Duluth, Minn.**—Commissioner Farrell has introduced resolutions awarding contracts for paving of Ninth St., from Seventh to Fourteenth Ave. East, to D. H. Clough & Co., on their bid of \$24,128.24, and for paving of Sixth St., from 21st to 25th Ave. West, to J. W. Preston on his bid of \$12,154.85. As contracts are over \$1,000, final action was postponed one week. Both thoroughfares will be paved with class B macadam.

**Duluth, Minn.**—Contracts for paving of Minnesota Ave., from 12th to 38th Sts., have been awarded to S. R. Okes Construction Co. on their bid of \$52,897.01, the paving of Woodland Ave., from Fourth St. to Kent road, to A. N. Nelson on his bid of \$17,793.20.

**Starkville, Miss.**—By Oktibbeha County contract to F. D. Harvey & Co., Memphis, Tenn., to construct 31 miles highway.

**Chillicothe, Mo.**—At a called meeting of City Council C. A. Stewart was awarded contract for paving of Cherry St., from Clay to 3d St., and 3d St., from Dickenson to point 1,200 ft. west. His bid for paving was \$1.60.

**Kansas City, Mo.**—For construction of 6,000 sq. yds. macadam and concrete pavement to J. C. Lyle, Kansas City, at \$1.23 per sq. yd. for concrete, and McCternan & Halpin, Kansas City, at \$1.45 per sq. yd. for macadam.

**Cliffside Park, N. J.**—To Valvoline Oil Co., Edgewater, N. J., for oiling streets and roads in town, at 6½c. per gal.

**Elizabeth, N. J.**—Contracts for improving three county roads have been awarded by county roads committee of Board of Freeholders. They were: Morris Ave., Summit, Weldon Contracting Co., \$5,159.50; Seven Bridge Road, Springfield, C. H. Winans Company, \$452.33; Spring-

field and Shunpike, C. H. Winans Company, \$1,636.48.

**Toms River, N. J.**—For constructing 5,000 feet road on W. Water St. by Ocean County Freeholders to Cranmer & Parker, West Creek, at \$13,000.

**Trenton, N. J.**—William F. McGovern of this city and Conrad Sebolt of New Brunswick, submitted lowest bid for construction of bituminous concrete pavement on Metuchen Perth Amboy Rd. Estimates were received by Board of Freeholders at New Brunswick a few days ago.

**Binghamton, N. Y.**—Meetings of Board of Contract and Estimates were held and contracts for two pavements were let. Bids were opened for construction of concrete pavements on Henry St. and Alice St. and resulted as follows: Alice St.—Davis & Coleman, \$1.49 per sq. yd.; A. D. Osborne, \$1.42; Tach & Chappell, \$1.50; Frank Stento, \$1.25. The contract was awarded to Frank Stento. Henry St.—A. D. Osborne, \$1.45; Davis & Coleman, \$1.51; Tach & Chappell, \$1.36; Frank Stento, \$1.26. This contract also was given to Frank Stento.

**Oswego, N. Y.**—For construction of 5,328 sq. yds. vitrified brick pavement on concrete foundation to J. A. Culkin, Oswego, N. Y., at \$2.36 per sq. yd. Total, \$19,423. Excavation included in price. Low prices received on resurfacing 1,700 yds. old asphalt pavement with vit. brick were: J. Henrick, Oswego, \$1.60 per sq. yd.; G. Dickerson, Syracuse, \$1.58; J. Culken, Oswego, \$1.58, and S. Bonn, Syracuse, \$1.58. J. F. Flanagan is C. E.

**Peekskill, N. Y.**—Contract for placing catch basins on Highland Ave., to D. D. Donovan.

**Syracuse, N. Y.**—But one proposal for flushing machine for Department of Public Works has been submitted to Board of Contract and Supply. This was by Charles Hyass & Co. of New York at \$900, and probably will be accepted.

**Columbus, O.**—County Commissioners have let contracts for improvement of Crestview Rd., in Perry township, to Harness Rennick of Kingston, who bid \$23,446.30, and for improvement of Reed Rd., also in Perry township, to W. O. Jewett of Worthington, whose bid was \$15,458.40. Water-bound macadam is to be used on both roads.

**Fremont, O.**—For paving with Metropolitan brick on Wayne St. to Modern Construction Co., Fremont, at \$13,049.

**Marble Cliff, Ohio.**—For paving Cambridge Pl., to D. E. Sullivan & Son, Columbus, at \$15,183.

**Oak Harbor, O.**—For paving Locust St. to Modern Construction Co., Fremont. L. Carstensen is City Clk.

**Harrisburg, Pa.**—For municipal asphalt repair plant by City Commission to F. D. Cummer & Co., Pittsburgh, at \$9,768.

**New Castle, Pa.**—Important contracts for city paving jobs have been let by City Council and work, costing approximately \$28,000 will be started immediately. M. J. Scanlon was fortunate in securing the two larger contracts, he being lowest of number of bidders who competed. The bid for the Moody Ave. paving job was awarded to Woods & Golder Construction Co., their bid of \$9,601.40 being the lowest submitted. To M. J. Scanlon was awarded Hazelcroft Ave. paving job contract at his bid of \$11,016, the lowest bid submitted. Scanlon also received contract for Madison Ave. paving job. For this work his bid was \$16,667.80 and was lowest of a number submitted.

**Pittsburgh, Pa.**—Contracts has been awarded by Director Robert Swan to M. O'Herron Co. for paving of Hamilton Ave. from Fifth Ave. to Frankstown Ave. and for laying of a sewer in the same street. Paving will cost \$49,000 and sewer \$3,000.

**Wilkesburg, Pa.**—For improving South Ave., Hay St. and Vincent Way, to Matthew Ott & Co., 414 Warrington Ave., Pittsburgh, at \$8,489.

**Newport, R. I.**—Contract has been awarded to Simpson Brothers Corporation, Boston, Mass., for wooden block paving of Broadway.

**Anderson, S. C.**—The Street Paving Commission has awarded contract to Southern Paving Construction Co., of Chattanooga, for 30,000 sq. yds. of vitrified brick paving to be laid in Main St. and 65,000 sq. yds. street asphalt paving to be laid on Market, Church, River, McDuffie, Greenville, Whitner and Calhoun Sts. Contract price for brick is \$1.95 per sq. yd. and asphalt \$1.42.

**Nashville, Tenn.**—By City Commissioners, contracts totaling \$408,913.06 for street paving, as follows: Foy-Proctor Co. at \$105,329.25 for wood block paving at \$54,409.20 for bitustone paving, and at

\$48,251 for granite block paving; B. T. Young at \$1,445.80 for concrete paving; Southern Bitulithic Co. at \$96,302.20 for bitulithic paving, each of Nashville; Southern Asphalt & Construction Co., Birmingham, Ala., at \$68,719.11 for bituminous macadam, tarvia "X" penetration method, and at \$39,456.50 for bituminous macadam, asphalt penetration method; W. W. Southgate is City Engr.

**Bryan, Tex.**—By city to C. L. Bernay, Houston, Tex., at \$21,411 to pave intersecting streets to Main St.

**Ennis, Tex.**—Contract for over 26,000 sq. ft. of street paving has been let by city to Kaw Paving Co. of Topeka, Kan. The paving is to be 3-in. vertical fiber brick on a 4-in. concrete base. The contract price complete is \$57,939.91 and work is to be completed in 90 working days. There were seven bids, the highest being for \$61,530.30, by General Construction Co. The Kaw bid was the lowest. Several more streets will probably be paved as soon as this contract is finished.

**St. Albans, Vt.**—It has been voted that Superintendent of Streets James H. Kennedy sign contract with Standard Oil Co. for oil to cover 75,000 sq. yds. of street.

**Concrete, Wash.**—For construction of 7,260 sq. yds. concrete and macadam pavement and 3,800 yds. earth excavation to Skagit Const. Co., Mt. Vernon, at \$1.05 per sq. yd. and 37 cts. per cu. yd. excavation. Total bid, \$10,512.10.

**Everett, Wash.**—By City Commissioners contract for paving Everett Ave. to Washington Paving Company, of Tacoma, at \$38,884.19.

**Olympia, Wash.**—Road building contracts totaling approximately \$23,000 have been awarded by State Highway Commission as follows: Pacific highway from Blaine southerly in Whatcom county, three miles, to be surfaced with gravel, awarded to Worthen & Satterthwaite of Linden at \$1.38 a yd., totaling \$6,444.60. Pacific highway from Kalama southerly in Cowlitz county; three and a quarter miles, to be surfaced with crushed rock, awarded to Porter & Conley of Portland at \$1.89 a yd., totaling \$11,576.25. Pacific highway from Carrolton north in Cowlitz county, two miles, to be surfaced with crushed rock, awarded to Montague & O'Reilly of Portland at \$2 a yd., totaling \$6,060. There were six bidders for the Blaine work, seven for the Kalama and five for the Carrolton. The highway board also awarded contract to Northern Pacific Railroad Co. to deliver 13,000 yds. of earth and gravel for fill in Nisqually bottom between Tacoma and Olympia, the contract price being 22½ cts. a yd.

**Raymond, Wash.**—County Commissioners have awarded contract for putting to grade and hard surfacing two miles of valley road between East Raymond and Giesy's ranch to Alford & Jamea, Centralia contractors. Contract includes two concrete bridges and will cost \$23,600.

**Seattle, Wash.**—Contract for concrete sidewalks on West 63d St. has been awarded to D. Parisi Co. at \$1,044.90 and for paving 9th Ave. W. to J. P. McHugh Paving & Cont. Co. at \$39,430.55.

**Tacoma, Wash.**—Contract has been let by County Commissioners to Oregon Road Oiling Co. to resurface 12.54 miles of hard surface paving in Pierce county for 4½ cts. per sq. yd. Contract specifies that roadomite, a high grade asphalt surface material, and sand be used. Roads to be resurfaced are: Pacific highway, north from the Milwaukee crossing to Sumner, 4.05 miles; Pioneer way from the city limits of Tacoma to Clark's creek, 3.66 miles; the Pacific highway south to the Country Club, 4.36 miles; Lakeview and Parkland Rd., .574 mile. Estimated total of surface to be covered is 119,926 yds. Work will be started immediately.

**Oconomowoc, Wis.**—To Nelson-Weber Constr. Co. contract for concrete walks for season 1915. Also for paving, curb and gutter work to cost \$19,521.99. J. Alex Stemper is city engineer.

## SEWERAGE

**Auburn, Cal.**—The Auburn Trustees have decided to call election on proposal to issue bonds for building additions to present sewer system. Proposed issue will include bonds for purchase of auto fire truck, at estimated cost of from \$10,000 to \$15,000.

**Sacramento, Cal.**—Plans for screen system to be constructed by city at new sewer pumping station on Riverside Road will soon be submitted to State Board of Health for formal approval. Dr. Williamson, of City Board of Health,

recently obtained tentative approval of the State Board to screen system. As result of tentative approval Sacramento will be relieved of necessity to install septic tank system, which would have cost more than \$100,000.

**Sacramento, Cal.**—It has been announced that state board of health had tentatively agreed on system of treating sewage which will save city at least \$100,000 to \$150,000.

**Bridgeport, Conn.**—Unless bids for new Housatonic Ave. trunk sewer run lower than is anticipated at present, the construction will cost city approximately \$100,000.

**Westford, Conn.**—House has passed bill for construction of sewers and disposal plant.

**Homestead, Fla.**—City is planing to install sewage disposal system.

**Altton, Ill.**—The East End trunk sewer will be first big improvement to be made by present administration. City Engineer T. H. Landon and his assistants will probably spend several months on plans for new sewer before first public hearing is called for.

**Peoria, Ill.**—Board of local improvement will order advertisements for bids for construction of northwest extension of west section of North Peoria sewer. Estimated cost, \$8,256.87.

**Clinton, Ia.**—Council has ordered City Engineer to prepare revised plans for fourth Ward sewers.

**Clinton, Ia.**—Council has ordered advertising for bids for Arnold St. sewer.

**Lawrence, Kan.**—Ordinances have been passed for construction of sewers in various streets.

**Topeka, Kan.**—City Engineering Department, under orders from State Board of Health, is going ahead with plans for construction of sewer in that part of Topeka roughly defined as bounded on east and south by city limits of Topeka, on west by right of way of Atchison, Topeka & Santa Fe Ry. Co., and on north by Kansas River.

**Paducah, Ky.**—Work of preparing specifications for construction of third district sewer is nearing completion and Engineer Stanley Miller expects to wind up work of surveying sewer right-of-way in about a week. Plans for sewer have been drawn by Aetna Engineering Co. of Chicago, but before contract can be advertised, other preliminary details must be completed.

**Lawrence, Mass.**—City will advertise for negotiation of \$30,000 sewer loan, City Council having voted to authorize City Clerk to advertise for that amount on request of Alderman Hannagan.

**Fenton, Mich.**—The proposition to bond village of Fenton for \$25,000 to construct complete sewer system has been carried.

**Flint, Mich.**—Ordinances have been passed for construction of various sewers.

**Duluth, Minn.**—Ordinance has been passed appropriating \$7,000 for construction of sewers.

**Wabasha, Minn.**—New sewer system is being planned.

**Atlantic Highlands, N. J.**—A special election on question of issuing bonds to amount of \$25,000 to pay for sewer extensions will be held here on date as yet to be set.

**Glen Ridge, N. J.**—That Glen Ridge is likely to join with East Orange, Orange and Montclair in construction of joint Imhoff sewage disposal system has been indicated at meeting of Glen Ridge Borough Council.

**Port Jefferson, L. I., N. Y.**—Installation of sewerage system is being considered. Committee will be appointed to investigate cost, etc.

**Syracuse, N. Y.**—A proposed supplemental agreement between Intercepting Sewer Board and John Young, contractor for Onondaga Creek improvement, has been approved by Board.

**Sylva, N. C.**—City has engaged Parker, Parker & Houser, Engrs., Asheville, N. C., to make surveys preparatory to constructing sewer system.

**Coshocton, O.**—A petition of residents of East Orange St., between Sixteenth and Seventeenth Sts., asking for extension of sewer to Seventeenth St., has been presented to Council.

**Mansfield, O.**—Citizens will shortly vote on \$125,000 bond issue for enlargement of purification plant by construction of Imhoff tanks and sprinklers. Engineer is F. A. Barbour, Tremont Bldg., Boston, Mass.

**Marion, O.**—After three readings resolution has been adopted providing for construction of sanitary sewer and storm water drain on Barks Ave., from Bellefontaine Ave. to Oak Grove Ave., and



east on Oak Grove Ave. to Uncapher Ave. sewer and storm-water drain.

**Piqua, O.**—Five bids have been opened by Service Director for storm sewers on South Wayne and South Downing and for sanitary sewers on South Wayne, South Downing and Adams Sts. The bidders are: Jack Mercer and Joseph Ziegler, of this city, N. C. Kershner, Boyd & Cook, and Charles F. Smith, all of Dayton.

**Connellsville, Pa.**—Plans for proposed sewage system for South Connellsville have been approved by State Board of Health, according to information that has just been received by borough officials, and steps will be taken immediately to proceed with work of laying sewers. Because of great cost of undertaking it will be necessary for town to vote bonds for the purpose. It is estimated that cost will be at least \$25,000.

**Erie, Pa.**—Construction of sanitary sewer in 29th St. from Glenwood Ave. 260 ft. east has been discussed by Council. Theodore Eichhorn, superintendent of streets, introduced an ordinance authorizing the work.

**Johnstown, Pa.**—Extension of Franklin St. sewer up to Roxbury hill is being planned.

**Montrose, Pa.**—Bids for sewage disposal plant and sewers will be received by Borough Clerk around June 10. Estimated cost is \$9,000. V. H. Shaw is Consulting Engr., Lancaster.

**Woonsocket, R. I.**—Members of City Council have voted to issue sewer bonds in sum of \$50,000.

**Flaudreau, S. D.**—Election has resulted in favor of issuing storm water sewer bonds in sum of \$4,000.

**Ogden, Utah.**—Plans and specifications have been approved by City Commissioners for 4,000 lin. ft. 8-in. pipe sewers. Washington Jenkins is City Engr.

**Chehalis, Wash.**—Resolution has been introduced providing for sewers in southern section of city.

#### CONTRACTS AWARDED.

**Birmingham, Ala.**—For construction of sanitary sewers in N. Birmingham, to the American Cast Iron Pipe Co., Birmingham, at \$10,700. Julian Kendrick is city engineer.

**Bridgeport, Conn.**—Contracts for two trunk and one small sewer have been awarded by Paving and Sewer Commission. The B. D. Pierce, Jr., Co. was awarded contract for Housatonic Ave. sewer, largest of the three. Following were the bids: B. D. Pierce, Jr., Co., \$56,886; Dwyer and Mannix of New Haven, \$75,804.65; Toole & Sunderland, \$77,140; William O'Neil Bros. of Hartford, \$75,839.96; Burns & Co., \$82,075.55; Pierce Manufacturing Co., \$93,957.85. The B. D. Pierce, Jr., Co. was also successful in winning contract for other large sewer in Seaview Ave., the seven bids being as follows: B. D. Pierce, Jr., Co., \$18,600; Burns & Co., \$20,439.50; Pierce Manufacturing Co., \$21,548.50; John Weston of Yonkers, \$23,710; John Manocchio & Co. of New Haven, \$24,509; Dwyer & Mannix of New Haven, \$27,591.50; Connecticut Good Roads and Construction Co. of Hartford, \$32,955.55. The competition for building of small sewer in Chamler Ave. was close and was awarded to Pierce Manufacturing Co. The following were the bids: Pierce Manufacturing Co., \$1,315.60; Burns & Co., \$1,321.20; B. D. Pierce, Jr., Co., \$1,392.35.

**Atlanta, Ga.**—By city to Case & Cothran, 1507 Candler Bldg., Atlanta, for construction of Group 2, Atlanta lateral sewers on Mildred, Rowland, Ethel, Caldwell, Chestnut, Bedford and Adamson Sts., Hemphill and Buna Festa Aves. and Durant Pl.

**Lewiston, Idaho.**—For constructing sewer in District No. 6 to Security Bridge Co., Lewiston, at \$7,853. C. F. Leland is City Clk.

**Ottawa, Ill.**—For construction of sewer system in northern part of city, to Green & Sons, Ottawa, at \$87,037.

**Pana, Ill.**—By Board of Local Improvement for septic sewage tank system to Sell & Kollar, of Pana, at \$26,692.

**Perru, Ind.**—County Commissioners have awarded contract for construction of Stedman ditch, 12 miles long, on county line between Miami and Howard counties, to Nappanee Drainage Co., for sum of \$24,965.

**Sioux City, Ia.**—For construction of North Riverside sewer system, to Ward & Wrighton, Sioux City, at about \$12,000.

**Duluth, Minn.**—Construction of sanitary sewer in Faribault St. from Shakopee to Kolstad Ave., has been awarded

to the J. R. MacLachlan Co. on their bid of \$1,274.74.

**Eveleth, Minn.**—The Lawrence-McCann Co. has been given contract for sewer work. The figures submitted by three contractors were close. Lawrence-McCann's bid was \$3,316.50.

**Fairmont, Minn.**—For 400 ft. 10-in. sewer and 8-in. sewer to J. W. Turner Imp. Co., Des Moines, Ia., at total bid of \$13,015.50. H. B. Tuttle is Clk.

**New Ulm, Minn.**—To Dearborn Construction Co., Waterloo, Ia., at \$19,575, for constructing sewers in various streets. F. D. Minium is city engineer.

**Billings, Mont.**—To Frank Savarsey at \$556.17 for installation of sewer from So. 29th St. between 4th and 5th Aves. South.

**Durham, N. C.**—For constructing 5½ miles of vitrified pipe sewers, to C. C. Jacob, Durham, \$12,217. Other bids were: E. M. Sheflow, Elgin, Ill., \$13,938; Mischler & Flynn, Chattanooga, Tenn., \$14,475; I. J. Smith Co., Richmond, Va., \$17,741.

**Marion, O.**—For sewers as follows: North Main St. sewer, to P. Drake & Sons, \$11,555; Park, Patten and the alley sewer, to Thomas Hurley, \$13,395; Uncapher Ave. sewer, to Kohbarger & Hoyles, \$15,021; Park St. sewer, to Hofstetter & Dawson, \$6,120.

**Hobart, Okla.**—By City Council to Pat Murphy, at \$1,020, for constructing septic tank.

**Indiana, Pa.**—For constructing one mile of 8-in. and ½ mile of 6-in. pipe sewers, to Bennett & Shearer, Indiana, at \$5,367. Thomas Pealer is engineer.

**Johnstown, Pa.**—Bid of M. M. Sheesley & Sons for constructing a sewer on Ohio St., amounting to \$2,807.22, was accepted. Baker & Owen's bid of \$453.20 for the Woodland Ave. sewer and of \$558.60 for the Forest Ave. sewer, were both accepted. The bid of R. A. Reighard of \$1,460.76 for Russell Ave. sewer, was accepted.

**Philadelphia, Pa.**—Contracts for sewer extension work to cost city about \$164,000 have been awarded by Director Cooke, of department of public works. The cost of each extension exceeds amount available, but rather than delay all of the work, Director Cooke will have as much done as can be paid for with money in hand. Awards made are: Adams Ave. from Romana St. to the northeast boulevard, to Robert Higgins, \$23,000; Fairhill St., from Tabor to and in Olney Ave., to Philadelphia Paving Co., \$18,300; Rock Run sewer, from Ashdale St. east of Mascher to Front, to Joseph Lombardi, \$24,000; Rock run sewer, in 7th St. from Chew Ave. to North Nedro St., to Frank Mack Construction Co., \$28,000; Robbins St., northeast of Torresdale Ave. to southeast of Jackson St., Robert Lombardi, \$23,000; Venango St. from Carbon to Casper St., Emilio Pascuzzi, \$23,000; Winghocking sewer, in Annsbury St. from 5th to Bodine, Peoples Bros., \$15,000. Reconstruction of main sewer in Thompson St. from Randolph to 7th, Keystone State Construction Co., \$34,500. Contracts for inlets in various parts of the city were awarded to J. Joseph McHugh and Frederick T. Buckius. These contracts call for work in two classes and in each the work will cost \$15,000. The amounts quoted for the sewer work represent the sum available in each case.

**Galveston, Tex.**—A tabulation in office of City Engineer A. T. Dickey show that F. D. Horton & Son of Houston are lowest bidders for all work on which bids were opened at meeting of the Board of City Commissioners. These proposals, three in number, were for constructing concrete drain along 37th St. from Ave. H to Ave. F, also same drain from Ave. H to Ave. B, and for construction of concrete drain and vitrified pipe sewer in alleys between Aves. D and E and Aves. C and D from 28th to 29th Sts. Tabulated totals of two proposals for each contract are: Drain, Ave. H to F—Freund & Quay, \$8,308.20; F. D. Horton & Son, \$8,168.70. Drain, Ave. H to B—Freund & Quay, \$20,981.12; F. D. Horton & Son, \$20,513.80. Drain and sewer pipe, between Aves. D and E and C and D, 28th to 29th—Freund & Quay, \$3,756.10; F. D. Horton & Son, \$3,648.54.

**Seattle, Wash.**—For construction of sewers on Leary Ave. to Benjamin, Hawley & Gartner at \$18,974.16.

**Esquimalt, B. C.**—Municipal Council for installing sewer system in Section A, which includes Craigflower District, to Thomas E. Young, at \$25,082.

#### WATER SUPPLY

**Susanville, Cal.**—The Susanville Water Works Co. is replacing one of old wooden water tanks with iron and concrete structure, with storage capacity of 115,000 gallons. This, together with iron tank, made last season, and one remaining wooden tank, will provide total storage capacity of approximately 185,000 gallons.

**Wilmington, Del.**—Board of Water Commissioners has estimated cost at \$55,000 to install water mains and renewal work.

**New Smyrna, Fla.**—City will be provided with adequate water works and sewer systems by October. Board of Works has signed contract with the J. B. McCreary Co., of Atlanta, for construction of same.

**Ocala, Fla.**—City Council is said to have engaged Twombly & Henney, Consulting Engrs., 55 Liberty St., New York, to supervise engineering work at water works and electric light plant to cost about \$75,000.

**Stone Mountain, Ga.**—Special election will be held June 5 to vote on question of issuing water and school bonds in sum of \$12,000.

**Springfield, Ill.**—Commissioner Spaulding has stated that he will introduce ordinance providing for laying of two or three miles of water mains which are urgently needed, owing to growth of city. City yearly expends between \$10,000 and \$15,000 for extension of water mains.

**Springfield, Ill.**—Senate and house subcommittees of waterways committees have instructed Engineers L. K. Sherman and E. J. Kelly to draft two plans for getting through Marcellus Water Power dam and have them ready to submit to committee.

**Denison, Ia.**—Election has resulted in favor of issuing water works system extension bonds in sum of \$2,000. E. F. Tucker is Village Clerk.

**Belchertown, Mass.**—Cost of water system has been estimated by Engineer James L. Tighe, of Holyoke. Cost of pumping system installation was placed at \$76,234 and gravity \$36,779. Only two supplies are being considered, the Belchertown Water Co.'s and that from Chambers Brook.

**Beverly, Mass.**—Bids will be received until 7 p.m., May 21, 1915, for furnishing city with eight 8-in. fire hydrants, six 8-in. main water gates, four 18-in. main water gates, 32 18-in. reducing branches, etc., and 10,000 lbs. pig lead. F. B. Browning is Clerk of Committee.

**Gloucester, Mass.**—Gloucester National Bank has taken \$30,000 water loan.

**Pittsfield, Mass.**—Appropriation of \$12,000 has been recommended by Finance Committee for water extension near Pontotoc Lake.

**Salem, Mass.**—Purchasing agent is asking for bids for about five miles of 36-in. water mains for new water supply from reservoir to be located on Folly hill.

**Campbell, Minn.**—Council is planning water works system that will draw its supply from deep wells.

**West Caldwell, N. J.**—Election has resulted in favor of issuing water main extension bonds in sum of \$10,000. Herbert Francisco is Borough Clerk.

**Wildwood, N. J.**—Election on May 4 has resulted in favor of purchasing the Wildwood water works by city. Price set by arbitration board is \$554,000 and bond issue to cover purchase will be floated at once, with additional \$20,000 to construct fire mains and new wells.

**Dunkirk, N. Y.**—The regular monthly meeting of Board of Water Commissioners will be held. Board probably will award contracts for furnishing supplies for relaying and repairing mains on several streets. The sum of \$10,000 has been appropriated for this purpose.

**Lindenhurst, L. I., N. Y.**—Village plans to spend \$70,000 for installation of municipal water plant. Main reservoir, according to plans, will be of 100,000 gallons capacity and will be situated 135 ft. from street level. It is proposed to make water district a trifle smaller than fire district, so that almost nine miles of cast iron pipe will be laid.

**Tarrytown, N. Y.**—The Consolidated Water Co., of Tarrytown, is to build new dam and water-shed at expense of \$150,000. Capacity of Pocantico Lake is to be increased from 90,000,000 to 360,000,000 gals. of water by proposed improvement and when finished is to store

eight months' supply. Water will extend back to Bucknout's Corners and local bidders are to have opportunity to bid on the work. The Potomac Lake already supplies village of North Tarrytown, Dobbs Ferry, Hastings, Scarsdale, and Ardsley.

**Bellville, O.**—Bonds in sum of \$25,000 will be sold noon, June 10, 1916, for construction of waterworks system.

**East Youngstown, O.**—Council at special meeting will probably take action towards inaugurating legislation for issuance of bonds, amount of which may total \$100,000 for purpose of installing new water system. Reports have been received from both the Mahoning Valley Water Co., and the Youngstown Water Co. These will be considered. It is proposed to furnish entire hill district with water, erecting standpipe for this purpose. It is also possible filtering plant may be constructed.

**Farmersville, O.**—Special election will be held May 25 to vote on question of issuing water works and fire protection bonds in sum of \$16,000.

**Napoleon, O.**—City will sell \$42,000 worth of  $\frac{3}{4}$  per cent. bonds for construction of municipal filtration plant. Plant was ordered by state board of health to purify water of Maumee River, city's source of supply.

**Bromide, Okla.**—Board of Trustees have retained the Bennam Engineering Co., Consulting Engrs., Oklahoma City, Okla., to make investigations, prepare estimates, plans and specifications for system of water works and electric light plant. Special election will be called after engineers report has been made. Probable amount of bond issue of \$15,000.

**Drumright, Okla.**—Election has resulted in favor of issuing water works bonds in sum of \$35,000.

**Beavertown, Pa.**—Borough has voted in favor of issuing water works bonds in sum of \$7,000.

**Bedford, Pa.**—Borough Council has approved ordinance providing for issuance of water bonds in sum of \$7,500.

**Gallitzin, Pa.**—D. W. Dillman, of Altoona is preparing plans for proposed water works, to cost about \$60,000.

**Dallas, Tex.**—Fire Chief H. F. Magee has recommended that big water main be laid on Eakin St. from Preston to Nettie St.

**Marlin, Tex.**—City is considering issuing \$50,000 in bonds to extend water works.

**Farmington, Utah.**—It is proposed to hold an election to vote on bond issue of \$40,000 for waterworks system.

**Colfax, Wash.**—Special election will be held May 24 to vote on question of issuing water works improvement bonds in sum of \$60,000.

**Prescott, Wash.**—Election has resulted in favor of issuing water works improvement bonds in sum of \$15,000. J. C. McSherry is City Clerk.

**Ottawa, Ont.**—Plans have been adopted by City Council for constructing overland intake pipe to Lemieux Island, to cost \$413,035.

#### CONTRACTS AWARDED.

**Palo Alto, Cal.**—To James Stanley, Sausalito, Cal., at \$13,396, for laying water mains. Other bidders were as follows: D. L. Blenheim, \$15,900; Pringle, Dunn & Co., \$16,448; Michael Murphy, \$16,677; Contra Costa Construction Co., \$17,181; Cashel Bros., \$17,243, and Power Equipment Co., \$18,970.

**Bridgeport, Conn.**—Contract for furnishing 25 new fire hydrants has been awarded to Pratt & Cady Co. Hydrants are to be of compressed type and will cost \$27.90 each.

**Montrose, Colo.**—Following contracts have been awarded from bids opened May 6, 1915: To Hendrie & Boltoff Mfg. & Supply Co., Denver, Colo., for steel pipe, fittings, valves and hydrants at \$26,643.98; to American Cast Iron Pipe Co., Birmingham, Ala., cast iron pipe and specials at \$22,124.74, and to J. R. Sutherland & Co., Kansas City, Mo., for labor, lead, jute, concrete and other materials not mentioned about at \$18,551.15. P. W. Pinkerton is City Manager.

**Jefferson, Ga.**—By city to Case & Co., 1507 Candler Bldg., Atlanta, to construct water works.

**Joliet, Ill.**—For constructing city reservoir to Foley Construction Co. of Chicago, Ill., at \$20,300.

**Morning Sun, Ia.**—For constructing water works to Public Service Construction Co., of Omaha, Neb., at \$13,370. Engineers are Harper & Stiles, Grand Ave. Temple, Kansas City, Mo.

**Vivian, La.**—By city to Chicago Bridge & Iron Works, Chicago, Ill., at \$22,785, to construct water works.

**Beverly, Mass.**—For furnishing and laying water mains about 2,900 ft. 18-in., to Warren Fdry. & Mch. Co., at \$22.50 per net ton.

**Grand Rapids, Mich.**—Board of Public Works has awarded contracts for east end water main extension, awards totaling \$34,353.50. Contract No. 1, for work from the pumping station to Michigan St., was awarded to D. W. Boyes for \$20,250. Contract No. 2, for work from Michigan St. to the standpipe, went to McDermott & Cooper, who bid \$14,103.50. John Vander Zwart at \$364.90 for water main work contract in Stella Ct., Major Ct., and Grace St. Verhev & Kloet were awarded water main contracts in Brown and Griggs Sts., and Thomas Ave., for \$726.79. The contract for improving Stella Ct. went to Haan & Buikema, who bid \$785.75.

**Clinton, Minn.**—To Des Moines Bridge & Iron Co., Des Moines, Ia., contract at \$4,630, for extension of water works system.

**Eveleth, Minn.**—Wm. Burke has been awarded contract for laying water mains on Hayes and Jackson St. His bid was \$1,196.50.

**New Ulm, Minn.**—To Union Machine Co., St. Paul, Minn., contract for about 3,000 ft. water mains, placing gates, fire hydrants and specials for extension of water works. Wm. Backer is City Clk.

**Perth Amboy, N. J.**—Contract for 12,000,000-gal. pump to Allis-Chalmers Co. at \$32,205.

**North Gates, N. Y.**—By Water Commissioner, North Gates Water District, for constructing system of water works, from plans of H. C. Kittredge, 815 German Insurance Bldg., Rochester, as follows: Furnishing cast iron pipe & specials to U. S. Cast Iron Pipe & Foundry Co.; valves to Chapman Valve Co.; hydrants to Ludlow Valve Co., and lay pipe, valves and hydrants to Comillo Molinari, 453 North St., Rochester, N. Y.

**Fosteria, O.**—To J. H. Jones, 4 Opera House Block, at \$50,800, for enlarging city reservoir. C. A. Latshaw is Engr.

**Middletown, O.**—Bids have been submitted for quantity of iron pipe for water works department. The bidders were: U. S. Cast Iron and Foundry Co.; J. B. Clow and Sons, Chicago; American Cast Iron Pipe Co. Bids were referred to water works committee and after making its report award was made to James B. Clow and Sons Co.

**Portland, Ore.**—To National Meter Co., at \$6,925, for furnishing ten water meters.

**Mt. Gretna, Pa.**—For construction of 150,000-gallon reservoir on state rifle range reservation to Emanuel Keener, of Colerook.

**Polk, Pa.**—To the Alberger Pump Co., for a motor-driven electric pump for water department at State Institution. Chester & Fleming, Pittsburgh, is Engineer.

**Galax, Va.**—To R. L. Blevins, Bristol, Tenn., for pumps, 45 hydrants and a reservoir. Cost, about \$16,000. B. D. Beamer is City Clk.

**Kent, Wash.**—For laying water mains, to W. T. Bonies, Kent, at \$5,980. Other bids were: Martin & Dugan, Seattle, \$6,776; Dickens & Richtmire, Seattle, \$6,291, and A. H. Cox & Co., \$6,389. L. E. Price is City Clerk.

#### LIGHTING AND POWER

**Casa Grande, Ariz.**—Franchise has been granted to F. H. Brackett and associates for installation and operation of electric power plant. Plant, including distributing system, is estimated to cost about \$150,000 to \$200,000.

**Techachapi, Cal.**—City has voted bond issue of \$8,000 for installation of municipal electric light plant.

**Homestead, Fla.**—City is considering installation of electric plant.

**Thomasville, Ga.**—City may vote on \$30,000 bonds to increase equipment of electric light plant, etc.

**Toccoa, Ga.**—Election will be held May 25 to vote on question of issuing municipal light bonds in sum of \$35,000.

**Peoria, Ill.**—Following are bids received for furnishing city with 25,000 ft. of 6-pair rubber-covered cable for city fire and police signal system: Standard Underground Cable Co., \$12.74 and \$13.11 per ft.; the Safety Insulated Wire and Cable Co., \$135 per 1,000 ft.; Elec-

tric Cable Co., \$136 per 1,000 ft.; Simplex Wire and Cable Co., \$143 per 1,000 ft.; Central Electric Co., \$205 per 1,000 ft.; National India Rubber Co., \$128 per 1,000 ft. On motion of Alderman Todd proposals were referred to committee on police and judiciary by a viva voce vote.

**Springfield, Ill.**—Contract with Kerr Turbine Co. of Wellsville, N. Y., for 750 KVA turbo-generator has been withdrawn temporarily by City Council for purpose of adding new details and to provide re-arrangement which will slightly reduce expense to city.

**Indianapolis, Ind.**—The Public Service Commission has heard evidence on petition of Merchants' Heat & Light Co. for permission to issue \$523,000 in bonds and \$144,000 in stock, because of betterments, extensions and improvements to its property.

**Milton, Ind.**—Town Board has accepted franchise of Connorsville Co. for constructing electric light and water works plant at this place. Company proposes to place pumping station at the river.

**Auburn, Ia.**—Election has resulted in favor of issuing electric light bonds in sum of \$2,000.

**Whitesburg, Ky.**—At special meeting of Town Council it is expected that franchise will be granted to Starkey Electric Co., of Somerset, for installation of electric light plant in Whitesburg.

**Russell, Minn.**—Village has voted in favor of issuing electric light plant bonds in sum of \$7,000.

**Corder, Mo.**—Election has resulted in favor of issuing electric light system bonds in sum of \$6,000.

**Granby, Mo.**—The Empire District Electric Co. has been given franchise to operate a lighting and power system.

**Cresco, Neb.**—Bids will be received by village for construction of electric-light plant, to cost about \$5,000. G. Johnson is village clerk. Grant & Fulton of Lincoln are engineers.

**Tekamah, Neb.**—Special election will be held May 18 for voting on issuing \$15,000, proceeds of which will be used for construction of municipal electric light plant. M. S. McGraw is City Clerk.

**Perth Amboy, N. J.**—Municipal light plant bonds in sum of \$150,000 have been sold to A. B. Leach & Co. and J. D. Everitt & Co.

**Ventnor, N. J.**—Bids for new lighting standards to be erected along Boardwalk and Ventnor have been received at meeting of Ventnor City Council. The prices ranged from \$42.75 to \$68.

**Lindenhurst, L. I., N. Y.**—The latest development of plan for establishment of municipal water plant in this village is now shaping itself in form of movement for incorporation of electric light supply station in scheme.

**Schenectady, N. Y.**—Contract for lighting of city streets and public buildings has not yet been awarded by board of contract and supply. The Schenectady Illuminating Company submitted bid as follows: Magnetite arc lamps, \$60 per year, from overhead or underground current connections, for all lamps now installed, and \$80 a year for all arcs to be installed in the future, with underground connection. The first charge is as now paid. Incandescent lamps: 40 c.p. at \$16 a year, 60 c.p. at \$18, 80 c.p. at \$23, each with overhead connection; 80 c.p., with underground connection, \$28; 100 c.p., with overhead connection, \$25; 100 c.p., underground connections, \$30. The rate on lamps under overhead crossing of railroad was fixed at 20 cents an hour.

**Waynesville, N. C.**—City has voted \$25,000 bonds for electric light and power system.

**Hamilton, O.**—West Side Commercial Association has made plans for installation of ornamental lighting system, which provides for 30 ornamental standards carrying five-lamp clusters, maintained by underground wires, to cost about \$3,250, to be paid by merchants and property holders. Electric Department will install system and maintain same for period of five years for amount named.

**Lewistown, Pa.**—Council has decided to reconsider resolution providing for ten-year light contract, defeated at last session of Council. The resolution is as follows: The Lewistown Borough Council will accept the 10-year proposal submitted by Penn Central Light and Power Co. for lighting streets of our borough at \$43 per year per arc of 216 watts and 400 candlepower and \$12.20 per year for 71.3 watt 150 candlepower, both kinds of lights to be of the new intromazda lamp style.

**Titusville, Pa.**—City has called upon electrical equipment companies and contractors to submit bids on new lighting



system which will be installed here during coming summer. Bids will be opened at special meeting of Council to be held on evening of Monday, May 24.

**Dallas, Tex.**—Proposition to furnish natural gas in Dallas at rate of 40c. (gross) per thousand feet for any quantity up to 40,000 ft. and on decreasing scale after that quantity has been used has been submitted to Board of City Commissioners by W. W. Johnson, who applied for franchise to pipe and sell Mexia gas in this city.

**Dallas, Tex.**—The new city administration in Highland Park is considering plans for system of ornamental street lighting, and for installation of police and fire alarm system.

**Victoria, Tex.**—Election has resulted in favor of issuing municipal light plant bonds in sum of \$40,000.

**Suffolk, Va.**—Ordinance advertising franchise for lighting the city has been put on its second reading and passed.

**Mount Horeb, Wis.**—The Mount Horeb Ht., Lt. & Pwr. Co. is making plans for installation of ornamental lighting system, covering four blocks. About 20 to 24 ornamental standards, to carry five-lamp clusters, are still to be purchased.

#### CONTRACTS AWARDED.

**El Modena, Cal.**—By Board of Supervisors contract to Southern California Edison Company for furnishing power for street lights at \$1.35 per light per month.

**Duluth, Minn.**—Contracts for gas and water main extensions have been awarded as follows: Simon Johnson, Cooke St., from 40th to 43d Ave. east, \$917.70; Simon Johnson, Kolstad Ave., from Faribault to Owatonna St., and Owatonna St., from Kolstad to Ewing Ave., \$678.40; John Hedberg, Waseca St., from 71st to 72d Ave. west, \$373.70, and Simon Johnson, 41st Ave. west, from Michigan to Superior St., and Michigan St., from 41st to 43d Ave. west, \$770.

**Jefferson City, Mo.**—Contract for wiring of White Way in Southside has been awarded to J. W. Stokes. It is understood that work is to be done for approximately \$1,100.

**Mansfield, O.**—Board of Control has awarded contract for city street lighting to Mansfield Railway, Light & Power Co., at its bid of \$18,736, of which \$11,560 is for general lighting, or residential district, and \$7,176 for the White Way. Other two bidders for contract were Cleveland, Southwestern and Columbus Railway Company, which submitted bid of \$21,128, and the Mansfield Electric Light & Power Co., whose bid was \$23,484. Contract will be signed within ten days. Contract is for period of ten years.

**Reynoldsville, Pa.**—A three-year contract has been signed with Reynoldsville Light and Power Co. Contract calls for arcs at \$70 a year and incandescent clusters at \$32.50.

#### FIRE EQUIPMENT

**Auburn, Cal.**—People will vote on purchase of auto fire truck to cost from \$10,000 to \$15,000.

**Stockton, Cal.**—Members of City Council and Architects Morrell & Thomas are considering plans and specifications for two new proposed fire engine houses.

**Pekin, Ill.**—Com. Zuckeweller has recommended purchase of some new equipment, including combination auto chemical and hose wagon, sale of present patrol wagon and purchase of new combination patrol and ambulance.

**Peoria, Ill.**—City Clerk has announced that he has three sealed proposals for furnishing city with 1½-ton auto hose truck for use of fire department, as follows: Isch Bros. & Hackshaw, \$1,800; the White Co., \$3,500 and \$3,000; Packard Motor Car Co., \$2,290. On motion of Alderman Bilbrough proposals were referred to committee on fire department by a viva voce vote.

**Sterling, Ill.**—Fire Chief recommends purchase of 1,000 ft. of new 2½-inch hose.

**Indianapolis, Ind.**—Board of safety has decided to ask City Council for additional appropriation of \$10,000 with which to build two new engine houses in Sherman Drive and Shelby St. There is not sufficient money on hand in building fund to pay for two houses. City Council originally appropriated \$28,000 for this purpose.

**Muncie, Ind.**—Sum of \$14,000 will probably be appropriated for purchase of motor apparatus.

**Ames, Ia.**—Citizens will vote on May 17 on question of issuing bonds for erection of combined city hall and fire station.

**Keokuk, Ia.**—Two automobiles for 6th

St. fire station will be purchased by city. One machine will be a large truck equipped with hose reel carrying 1,000 feet of hose, a chemical engine, ladders, two Babcock extinguishers, and perhaps a pump engine for increasing water pressure.

**Ashland, Ky.**—Purchase of motor apparatus is contemplated.

**Auburn, Me.**—City is discussing installation of up-to-date alarm system. G. W. Merrill is Chief.

**Indian Orchard, Mass.**—Purchase of motor pumping engine is being urged by citizens.

**Randolph, Mass.**—Appropriation of \$5,500 has been voted for purchase of a motor combination chemical and hose wagon.

**Lansing, Mich.**—Fire Chief H. R. Delfs has recommended purchase of auto aerial and erection of another fire station.

**Cloquet, Minn.**—Installation of fire alarm system is said to be under consideration.

**Carthage, Mo.**—Motorizing of hook and ladder wagon is being discussed.

**Kansas City, Mo.**—Citizens will vote June 1 on question of issuing \$125,000 in bonds for erection and equipment of new station.

**Allenhurst, N. J.**—Purchase of steamer for fire department is being considered.

**Spring Lake, N. J.**—Special election may shortly be held to decide purchase of motor apparatus.

**West Orange, N. J.**—Town Council will advertise for bids for furnishing motor apparatus, to include triple combination wagon. James Sheehan is Chief.

**Babylon, L. I., N. Y.**—Village has voted favorably on purchase of auto hose wagon for use of Sumpwams Hose Co. Cost, \$2,000.

**Fredonia, N. Y.**—Purchase of automobile fire truck is being considered.

**Coshocton, O.**—Erection of downtown sub-fire station is being considered, also the purchase of motor truck.

**Coshocton, O.**—Installation of motor truck fire department is being considered.

**Eugene, Ore.**—Purchase of another fire truck is recommended.

**Allentown, Pa.**—Report of committee on fire prevention to National Board of Fire Underwriters recommends immediate reorganization of fire department of city on full paid basis and suggests distribution of the fire-fighting force throughout the city.

**New Castle, Pa.**—Bids for 500 ft. of fire hose needed by local fire departments have been opened in Council. No decision was reached as to what brand would be chosen, as it was desired to go over bids informally, in committee of whole, and to discuss various brands with Fire Chief Frank Connerly. The following bids were submitted: Fabric Hose Co., through C. Ed. Smith, hose ranging from 90c. to 75c. per ft.; Bi Lateral Hose Co., through H. R. Houston, 95c. and 90c. per ft.; Eureka Fire Hose Co., no local dealer, price range from \$1 to 80c. per ft.; Empire Rubber Co., through New Castle Hardware Co., price range from 98c. to 78c. per ft.; Gutta Percha Rubber Co., through Horton & McNab Co., price range from \$1.05 to 75c. per ft.; Hewett Rubber Co., of Buffalo, N. Y., no local dealer, 50c. per ft.

**Pottsville, Pa.**—Board of Fire Underwriters has recommended installation of motor apparatus. J. A. Lynaugh is Chief.

**Smyrna, Pa.**—Council is planning purchase of motor combination chemical and hose wagon.

**Steelton, Pa.**—Installation of at least one piece of automobile fire apparatus is being discussed.

**Williamsport, Pa.**—A resolution has been presented by Councilman Harman recommending that city purchase 1,800 ft. of fire hose from following companies: E. Keeler Co., 500 ft. of Boston Fire Jacket at 90 cts.; Republic Rubber Co., 250 feet of Gusher brand, at 90 cts.; Iroquois Rubber Co., 250 ft. Royal brand, at 75 cts.; Diamond Rubber Co., 250 ft. Diamond No. 1 brand, at 79½ cts.; Eureka Rubber Co., 300 ft. of Helmet brand at 80 cts., and Fabric Fire Hose Co., 250 ft. of Black Diamond brand at 90 cts. Resolution approved at executive session was passed unanimously at special meeting.

**Austin, Tex.**—Election will be held June 2 to vote on question of using fire and police alarm bonds in sum of \$25,000.

**Dallas, Tex.**—Fire Chief H. F. Magee has made several recommendations for improvement of fire department. The first is to recommend new fire station on city's lot, Columbia and Augusta Sts.,

to be equipped with automobile engine. The second urges purchase of two motor tractors to attach to apparatus at No. 5 Station near the courthouse. These tractors will do away with six horses and cut down expenses. The third requests automobile supply wagon. Another recommends automobile for Assistant Chief Charlie Jones of Oak Cliff. Other recommendations are for repair shop at Gaston and College Aves., an automobile pumping engine for No. 1 Engine Co. on McKinney Ave., the purchase of a combination chemical and hose wagon for West Oak Cliff Station, the purchasing of a new automobile for the chief by trading one now in use and erection of a feed and supply station at Bryant and Hawkins Sts. He also recommends that all horse-drawn apparatus be replaced with motor-driven apparatus just as fast as city can provide.

**Temple, Tex.**—City Council has called special election to vote on issuing \$40,000 bonds for erection of two stations, purchase of equipment and installation of electric alarm system. T. S. Wright is chief.

**Richmond, Va.**—The Administrative Board has directed City Engineer Bolling to submit estimate as to cost of installing fire fighting apparatus on city tug.

**Richmond, Va.**—Board of Fire Commissioners has decided to ask City Council for appropriation of \$22,000 for improvements, of which \$10,000 would be for motor apparatus, \$2,500 for extension of alarm system, and \$9,500 for erection of a new station. W. H. Joynes is Chief.

**Bellaire, W. Va.**—Ordinance calling for special election on bond issue of \$16,500 for purchase of automobile fire trucks and motorizing present equipment will be introduced.

#### CONTRACTS AWARDED.

**Fresno, Cal.**—To American La France Co., Elmira, N. Y., contract at \$9,500 for furnishing at 135-h.p. motor-driven fire engine.

**Los Gatos, Cal.**—To American-La France Fire Engine Co., Inc., Elmira, N. Y., for furnishing motor combination chemical and hose wagon.

**Bridgeport, Conn.**—Orders have been placed with several hose companies totaling 4,000 ft. at a cost of \$3,875. The Baker Fabric Hose which costs \$1.05 a ft. about 1,500 ft. of it was ordered at that price. The remainder of orders follow: 1,000 ft. of Eureka hose at \$1; 500 ft. of Fabric hose made in Sandy Hook, Conn., at 90 cts.; 500 ft. of Quaker City hose at 90 cts., and 500 ft. of Bay State at 80 cts.

**Bridgeport, Conn.**—Board of Fire Commissioners has voted to purchase two ton and a half Mack trucks. It was decided that proposition offered by Agent C. H. Finnegan of International Motor Co. to furnish Mack trucks with complete equipment for \$2,297 each, would be best bargain for city.

**Indianapolis, Ind.**—Board of Works has opened bids for construction of new fire engine house in Sherman Drive, near New York St. William Everly, who bid \$13,687, was low bidder on general contract.

**Indianapolis, Ind.**—Board of Works today has opened bids for construction of new fire engine house in Shelby St., between Taber and Kelly St. The Shiel-Chapin Construction Co. was low bidder for general contract, outside of plumbing, heating and electric wiring. Bid of this company was \$12,867.

**Clinton, Ia.**—To American-La France Fire Engine Co., Inc., Elmira, N. Y., contract for furnishing motor hose wagon.

**Waterloo, Ia.**—Contract for constructing another motor fire truck has been awarded to the Dart Motor Truck Co. at \$2,824.

**Anaconda, Mont.**—To Seagrave Co., Columbus, O., for furnishing motor combination chemical and hose wagon.

**Deal, N. J.**—To Gamewell Fire Alarm Telegraph Co., Newton Upper Falls, Mass., for installation of fire alarm system, at \$1,772.

**Highland Park, N. J.**—Contract has been awarded to American-La France Fire Engine Co., Inc., Elmira, N. Y., for furnishing motor combination chemical and hose wagon, \$5,000, and to Gamewell Fire Alarm Telegraph Co., Newton Upper Falls, Mass., for installation of an alarm system.

**Schenectady, N. Y.**—Board of Contract and Supply has awarded contract for fire hose to Clark Witbeck Company, lowest bid submitted at meeting last week. The order is for 2,200 feet of 2½-

inch hose at \$0.445 cents per foot and 1,000 feet of 2-inch hose at \$0.67 per foot.

**New Bern, N. C.**—Contract for 1,000 ft. of hose has been awarded to Gutta Percha & Rubber Mfg. Co. of New York, and contract for new motor triple combination fire engine to American-La France Fire Engine Co. of Elmira, N. Y.

**New Castle, Pa.**—Contract for furnishing of 500 ft. of fire hose for local fire department has been awarded to Eureka Fire Hose Co. at their bid of 80 cts. per ft.

**South Bethlehem, Pa.**—Fire Committee has reported entering into contract with American La France Fire Engine Co., Elmira, N. Y., for purchase of motor apparatus.

**Richmond, Va.**—To Waterous Engine Works Co., St. Paul, Minn., for furnishing motor pumping engine with capacity of 750 gallons, and also to International Motor Co. for 4 motor chasses.

**Puyallup, Wash.**—Contract for 30 horsepower White auto fire truck through J. F. Hickey Motor Car Co. of Tacoma has been authorized.

**Milwaukee, Wis.**—To Seagrave Co., Columbus, O., for furnishing three motor combination chemical and hose wagons, at \$15,000.

**Wausau, Wis.**—For furnishing a motor combination chemical and hose wagon to American-La France Fire Engine Co., Inc., Elmira, N. Y., \$6,000, less \$600. Other bids as follows: Seagrave Co., Columbus, O., \$5,850, less \$700 for old equipment; The White Co., Cleveland, O., \$4,995, less \$314; Kissel Kar Co., Hartford, Wis., \$5,750, less \$350.

### BRIDGES

**Burlingame, Cal.**—Ten reinforced concrete bridges are to be built throughout Easton additions to Burlingame to replace wooden structures now giving passage over creeks and ravines of this section. At last meeting of Burlingame Trustees City Engineer Eric Wood submitted plans and specifications for bridges and preliminary steps necessary for their construction have been ordered taken. The bridges will be of ornate type.

**Deland, Fla.**—Volusia county will vote June 8 on \$400,000 bonds to construct concrete bridge and hard-surfaced roads.

**Sterling, Ill.**—Contract for concrete reinforced bridge across Sugar Creek has been awarded to J. B. Ford of Geneva at \$2,018.

**Fort Wayne, Ind.**—County Commissioners have announced they would be able to devote \$6,000 to construction of bridge over Spy Run Creek, at New Fourth St.

**Lake Charles, La.**—Calcasieu Parish Police Jury has instructed Highway Dept. to ask for bids to construct reinforced concrete arch bridge with double-leaf Strauss trunnion bascule span over Calcasieu River.

**Lowell, Mass.**—Loan order of \$86,000 for new Pawtucket bridge is being considered.

**Holly, Mich.**—The Holly council is making arrangements to build new bridge over Shiawassee River on Le Grand St. The work will be done under direction of M. H. Wendell. Bridge will be constructed of steel and cement. It will be 30 ft. long and 20 ft. wide, with 4-ft. path on east side and a 16-ft. wagon road. Bridge will cost about \$650.

**Concord, N. H.**—Mayor and Board of Aldermen have authorized bridge bond issue in sum of \$86,000.

**Atlantic City, N. J.**—Proposed survey of site for erection of Penn Memorial Bridge across Delaware has received unanimous support of Atlantic County Board of Freeholders following visit of delegation of Philadelphia and Camden business men.

**Elizabeth, N. J.**—Board of Freeholders has voted to issue \$45,000 in thirty-year bonds for building Baltic St. bridge.

**Easton, N. Y.**—Election has resulted in favor of issuing bridge bonds in sum of \$23,000.

**Utica, N. Y.**—According to information received by W. Pierrepont White of this city, Gov. Whitman has signed bill appropriating \$25,000 for half-way bridge at westerly edge of city.

**Youngstown, O.**—Bids have been opened by county commissioners on contract for first concrete bridge in Mahoning county, the structure to be built over Yellow Creek, south of Struthers, replacing a steel span. The proposed bridge has a span of 70 feet. Sixteen contractors submitted bids, the prices ranging from \$4,118 to \$6,015. Five of lowest bids were taken under consideration. The bids being considered are as follows: Spoon and Laubert, \$4,118; Iron City Stone and Construction com-

pany, \$5,182; Wymer-Harris Construction company, \$5,185; Fleming, Hahn and Platt Construction company, \$5,196.50, and R. C. Shook, \$5,445.

**Tulsa, Okla.**—Plans for new \$200,000 county Arkansas river bridge to be constructed upon site of present bridge will be drawn by Harrington, Howard & Ash of Kansas City, according to decision reached by Board of County Commissioners.

**Petersburg, Va.**—Question of overhead bridge to replace Bishop bridge, which connects Petersburg with Chesterfield county, has about been decided upon. The proposed structure will be of steel and concrete and will cost approximately \$225,000, \$52,000 of which was provided for in city's bond issue of 1912.

### CONTRACTS AWARDED.

**Wilmington, Del.**—Contracts for erection of bridge spanning Hook creek on Wilmington Post Rd., known as Marcus Hook bridge, at cost of \$3,900, and another known as Media bridge, to cross Ridley creek on Baltimore pike, costing \$14,000, have been let to C. T. Eastburn Co., Inc., by Delaware County Commissioners.

**Illinois.**—By State Highway Commission, Springfield, for constructing bridges in Shelby County, as follows: Section B, to Townsend B. Smith, Evanston, \$3,298; Section D, to Tressler & True, Tower Hill, \$2,843; lowest bid for Section C submitted by Townsend & Smith, at \$3,248.

**Kent, Ill.**—For erection of bridge to Wm. H. Shons at \$2,900.

**Winamac, Ind.**—County Commissioners have let contracts for construction of five bridges to F. M. Williams & Co. The Bader & Collins Co. got one bridge contract and the Rochester Bridge Co. got contracts for two.

**Council Bluffs, Ia.**—Bids for construction of five important bridges in various parts of county have been opened by board of supervisors and contracts awarded to Lana Construction company for total compensation of \$18,917. A 100-ft. high truss steel bridge in section 21, Rockford township, will cost \$2,646; a 70-ft. pony truss bridge in section 20 of Knox township, \$1,609; 40-ft. pony truss, in section 26 of Grove township, \$2,291; 90-ft. through steel plate girder, in section 7, Lewis township, \$6,881; 100-ft. pony truss, in section 36 of Waveland township, \$5,490.

**Iowa City, Ia.**—For street railway bridge across Iowa river to B. J. Lambert of this city at \$20,000.

**Mayfield, Ky.**—By city to C. H. Delano of Mayfield at \$2,475 to construct bridges on 6th and 7th Sts.

**Cumberland, Md.**—By city to Vang Construction Co. of Cumberland at \$12,000 to construct bridge across Wills Creek at Market St.

**Northampton, Mass.**—County commissioners have awarded two contracts for improvements on Hadley bridge, at total price of \$52,350. Contract for reconstruction of piers was awarded to Holbrook, Cabot & Rollins corporation of Boston at price of \$32,750, and contract for repairs and improvements on superstructure to Providence Steel and Iron company at price of \$19,600.

**Lancaster, N. Y.**—For constructing reinforced concrete arch bridge over Cayuga Creek, at Broadway, to Howard L. Meyer, Bowmansville, at \$12,520.

**Sylva, N. C.**—By city to Parker, Parker & Houser, Engrs., Asheville, N. C., to construct 70-ft. concrete bridge to connect two sections of city on each side of river.

**Youngstown, O.**—Contract for a 70-ft. concrete bridge across Yellow Creek, south of Struthers, has been awarded to Harvey & Watson, of Pittsburgh, by County Commissioners for \$4,351.25.

**Media, Pa.**—For constructing bridge on line Baltimore Pike to Charles T. Eastburn, of Yardley, at \$14,485. Orim L. Davis is County Controller.

**Houston, Tex.**—By city to Eureka Paving Co., Carter Bldg., Houston, to construct reinforced concrete bridge across Harris Bayou on Main St. Blvd. to cost about \$13,000.

**Tacoma, Wash.**—Contracts for two new bridges, one at South Prairie over South Prairie Creek and one over Tahoma Creek in the government forest reserve, have been awarded to C. E. Lichens of Tacoma, a local contractor representing the Omaha Structural Iron & Steel Co. The South Prairie bridge will be of steel, having a 60-ft. steel span and a 170-ft. timber approach. It is to cost \$3,000. The Tahoma Creek bridge is government contract and will be of concrete, having two 30-ft. spans. It will cost \$3,200, and be built about seven miles from Ashford.

### MISCELLANEOUS

**Bridgeport, Conn.**—At an informal meeting of Board of Fire Commissioners it was voted to place order for several pieces of machinery for equipment of department machine shop. The new machinery will enable Superintendent of Machinery A. L. Tracey and his force of mechanics to do practically all of repair work on motor apparatus in department.

**Washington, D. C.**—An American consular officer in Spain reports that business man in his district desires to establish commission business for purpose of handling American-made machinery, electrical goods, copper, iron, and steel manufactures, parts for construction of wagons and street cars, lubricating oils, disinfectants, etc. It is stated that this man has been connected with a well-known Spanish import firm for number of years, but is now desirous of taking up business for himself. Bank references are given. No. 15,790, Bureau of Manufactures.

**Augusta, Ga.**—Health committee of Council has canvassed bids submitted under request for proposals by Commissioner of Public Works, for furnishing all material and labor for constructing, complete, an incinerator plant in the 6th ward. Proposals were received on units of two sizes, one 8 to 10 tons capacity in 12 hours daily run, and one 12 to 15 tons capacity in 12 hours daily run. Bids were received as follows, first figures being on smaller capacity plant, next figures on larger capacity plant: Charles F. Walters, \$6,500—\$7,500; T. O. Brown, \$3,986—\$5,137; J. C. Derrough Co., \$5,400—\$6,200; Nye Odorless Crematorium Co., \$4,500—\$7,000; American Sanitarium Co., \$8,530—\$9,530; Municipal Improvement Co. (brick), \$12,462—\$16,575; Municipal Improvement Co. (concrete), \$8,688—\$9,989; National Bridge Co., \$11,472. The noticeable difference in the bidding is explained by different types of buildings and different types of plants in contemplation by the bidders.

**Springfield, Ill.**—Dredging of Illinois river from Morris to Marseilles sufficient to insure average channel depth of 8 ft. is latest plan of engineers and some of the members of house and senate subcommittees. Engineers L. K. Sherman and E. J. Kelly who, at instruction of the subcommittee, figured on Morris to Marseilles stretch, estimated that dredging needed would not cost to exceed \$600,000 to \$800,000 addition.

**Indianapolis, Ind.**—The Marion County Council has opened the way for establishment of hospital for treatment of persons afflicted with tuberculosis by appropriating \$12,000 to be used by Board of County Commissioners in obtaining proper building site and plans for proposed hospital.

**Keokuk, Ia.**—A bond issue of \$10,500 has been authorized by City Council and bid of N. W. Halsey & Co., of Chicago, for the bonds was accepted.

**Boston, Mass.**—Mayor Curley will send to City Council on Monday a \$100,000 loan order for improvements on Ronan Park, Dorchester; a \$150,000 loan order for completion of Ward 19 playground, near Mission Church, Roxbury, and a \$500,000 loan order for new street paving in downtown section.

**Danvers, Mass.**—Road Commissioners have voted to buy 5-ton truck for hauling gravel and other general uses in highway department, the estimated cost of which is \$4,700 to \$5,000, the money to be taken from general appropriation.

**Haverhill, Mass.**—Purchase of pulmotor for police department has been authorized.

**Northampton, Mass.**—County Commissioners have opened bids on the reconstruction of piers and repairs to superstructure of Hadley bridge. The bids indicate expenditure of about \$50,000, including preliminary expenses. Bids on rebuilding piers were following: H. P. Converse, of Boston, \$34,224; H. P. Cummings Construction Co., of Ware, \$56,600; Foundation Co., of New York, \$46,400; Holbrook, Cabot & Rollins, of Boston, \$32,750; Fred T. Lev, of Springfield, \$35,000; William L. Miller, of Boston, \$42,772; Daniel O'Connell's Sons, of Holyoke, \$40,000; M. I. O'Connor, of Northampton, \$34,900; Rivers & Young Co., of Willimansett, 8 per cent. profit on a total cost of work, they to have the salvage, or do the work at a day rate, plus \$3,000 profit, and they to have salvage. The bids for all the work by G. F. Austin, of Providence, was \$47,500. If the steel is cleaned by the sand blast process, or \$47,000 if cleaned by hand. On superstructure, two bids were given